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All communications to be addressed:

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T. PASCOE,

*Minister of Agriculture.*

## POINTS FOR PRODUCERS.

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### **Thirty-second Congress of Agricultural Bureau.**

The thirty-second Annual Congress of the Agricultural Bureau has been fixed to take place in the Victoria Hall, Adelaide, on Monday, 12th, Tuesday, 13th, Wednesday, 14th of September. His Excellency the Governor (Sir W. E. G. A. Weigall) has been invited to open the Congress. Branches of the Agricultural Bureau have been invited to submit for consideration subjects for discussion and papers to be read. They have also been asked to nominate two members each to attend the Congress.

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### **Pinnaroo Lines Branches Conference.**

The Annual Conference of Branches of the Agricultural Bureau situated along the Pinnaroo railway line has been arranged to take place at Parilla on Thursday, August 25th, the week following the Conference of Southern District Branches, which is being held on August 18th at Port Elliot.

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### **Ammonia Fixation by Gypsum.**

It has been found that the addition of gypsum to manure prevents the volatilisation of ammonia. To verify the truth of this, officers of the Ohio State University have made laboratory experiments, in which they used, instead of manure, filter paper pulped fine and dried. This was intimately mixed with pure sulphate of calcium and a solution of carbonate of ammonia was poured over the compacted material, so as to bring the water content of the mixture to 75 per cent. The proportions of the ingredients were calculated so as to represent 300lbs. of gypsum, in the form of sulphate of calcium, and 19.29lbs. of nitrogen per ton of material. The bottles containing the mixture were heated to temperatures ranging between 20deg.-85deg. C., and a current of moist air, freed from which carbonic acid and ammonia, was passed through the mixture into absorption bottles containing standard acid solutions. The experiments lasted for 95 days; the aspirations were of 10-minute periods, and were made from time to time at intervals ranging from four times in nine days to ten times in five days. The nitrogen loss at the end of the experiment was 11.84 per cent. of the amount applied, while in the case of the experiment without gypsum, made simultaneously, the nitrogen loss was 58.29 per cent. At higher temperatures, above 30deg. C., nitrogen was lost in a greater proportion, and consequently less was retained by the gypsum. Under the conditions in which the experiment was carried out the reaction would be an ordinary double decomposition between the sulphate of calcium and the carbonate of ammonium, a reversible reaction if moisture was decreased; in manure there are naturally more reactions, chiefly subsequent. To sum up; says the "Inter-

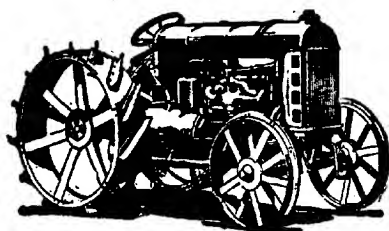
national Review of the Science and Practice of Agriculture," the treatment of manure with gypsum in the proportion of 300lbs. of sulphate of calcium per ton of manure would effect a satisfactory ammonia fixation when there is enough water to soak the gypsum. Whether that ammonia would remain fixed subsequently, and whether the addition of gypsum to manure is economical, are questions which are not answered by the authors' experiments.

### CUT WORMS.

In November of last year a correspondent in the Rendelsham district sought the advice of the Director of Agriculture (Professor Arthur J. Perkins) with relation to exterminating a grub that was reported to be making great havoc amongst the chicory crop locally, and also to be prevalent in potato and onion crops. The correspondent reported that he had tried various measures, such as lime, spraying with arsenate of lead, arsenic and bran, and also sprayed with Paris green, but with no apparent result. The Director of Agriculture communicated with this correspondent as follows:—"From the description you give, I take it that your crops are being attacked by what are known as 'cut worms'; they are caterpillars of a small moth, and do very much damage on the lines indicated by you to most crops. At one time I had a good deal of trouble with these cut worms in connection with endeavors to establish a vineyard; they completely stripped the foliage on the young vines, and eventually destroyed them. The best method of dealing with them is indicated on page 8 of the Bulletin No. 70, of this Department, which I am forwarding you under separate cover. Whether you can apply this remedy (a mixture of bran, molasses, and Paris green) to a chicory crop will depend a good deal on the area you have to cover. There is not the slightest doubt that if this mixture is placed within reasonable access of the caterpillars, they consume it, and are gradually destroyed. This is the general experience of all those who have tested the matter, and I strongly recommend your giving it a fair trial. It is very essential, of course, that the mixture be carefully made. I believe that the best way to prepare it is as follows:—Dissolve the molasses, or treacle, in hot water, and then add the Paris green, stirring up the mixture thoroughly, so that the particles of Paris green may remain in suspension as you gradually pour the mixture on to the bran. The bran should be thoroughly mixed up by rubbing it between the hands until the whole mass has a distinct green color. If the skin is broken on the hands in any way, it will be necessary to wear a pair of old gloves for the purpose. You will notice on page 7 of the same bulletin, spraying mixtures which can be recommended, and if you are able to apply these well, you will have additional security."

This correspondent has now written, stating that he has tried the Paris green mixture, as recommended, and it proved to be the only effectual method of coping with the grub, and was far ahead of spraying. He saved some of his chicory and all of his potato crop.





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## INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies supplied by C. A. LOXTON, B.V.Sc., Government Veterinary Surgeon.]

"J. B.," Meadows South, has 3-year-old boar, eats well, but fails to put on condition.

Reply—Your inquiry to hand re 3-year-old boar in low condition. It is desirable that he should have a pen and yard to himself. Sunlight and a good dry bed are necessary. Feed him liberally. Do not allow him to serve. Examine his dung for evidence of worms. Look for any suspicious symptoms such as cough. If he does not respond to special care and feeding write again, and an inspection will be made.

"E. M. G., Strathalbyn, reports death of calf. Symptoms:—Sudden swelling of the stomach, and death after seven hours.

Reply—The cause of death was acute indigestion with flatulence. If seen early give:—Epsom salts, 1 tablespoonful; soda bicarbonate, 2 teaspoonfuls; powdered ginger,  $\frac{1}{2}$  teaspoonful, in half a pint of warm water. Repeat next day if necessary. Give 3oz. castor oil if this does not relieve any constipation. The use of lime water, about one-fourth the quantity of milk, is useful in preventing this trouble.

## DEPARTMENTAL DOINGS.

### AMONGST THE AGRICULTURISTS.

In the thought that it is of interest to the rural community, information respecting some of the activities (more especially those connected with the Agricultural Bureau system) of the officers of the Department of Agriculture is given below. No attempt is made to detail the month's operations of the Department; the subjoined particulars merely cover some of those cases in which officers have come into direct contact with the men on the land, either at meetings of Branches of the Bureau or on their individual holdings.

## AGRICULTURE.

The Rosedale Branch of the Agricultural Bureau was addressed by the Director of Agriculture (Professor Arthur J. Perkins), who also, whilst in the district, took the opportunity of having a look over the Turretfield Farm.

Mr. W. J. Spafford (Superintendent of Experimental Work) visited Nunkeri and Yurgo, addressed the local Branch of the Agricultural Bureau, and determined on a site for experimental plots to be established in conjunction with the Bureau.

## FARM BUILDINGS, ETC.

Mr. G. Lewis (Bundaleer) and Mr. H. J. Richardson (Jamestown) were visited by the Field Engineer (Mr. J. Paull), who supplied information in the case of the former relating to the erection of general farm buildings, and the latter in connection with the erection of a shearing shed.

This officer also supplied plans and specifications for a 400-ton silo to Messrs. H. W. Morphet & Co., Woods Point.

## HORTICULTURE.

Orchards at Murray View, Waikerie, and Holder were visited by the Horticultural Instructor (Mr. George Quinn), in company with the delegates to the River Murray Conference. This officer also visited Stonyfell, to see the operation of olive oil making in a modern factory; and attended the championship pruning competitions at Berri. Pruning demonstrations and lectures were given at Cadell and Glossop, at the latter of which places a number of the blocks were inspected.

Mr. C. H. Beaumont (Orchard Instructor, Southern Districts) gave pruning demonstrations to the High School students at Murray Bridge, and also a public demonstration. The Murray Bridge Branch was addressed on "Spraying and Spraying Machinery."

## GENERAL.

The Secretary Advisory Board (Mr. H. J. Finnis) accompanied delegates to the River Murray Conference on a visit to Murray View, Waikerie, and Holder. He also attended the district pruning competitions at Waikerie and Moorook, and the championship competition at Berri. In company with Mr. F. Coleman (member Advisory Board) a visit was paid to Strathalbyn, and addresses delivered before the local Branch of the Agricultural Bureau.

## POULTRY.

The Poultry Expert (Mr. D. F. Laurie) addressed a meeting at Brighton.

## SOME FEEDING TESTS WITH PIGS.

[By ARTHUR J. PERKINS, Director of Agriculture.]

(Continued from page 471.)

In the January issue of the *Journal* I published results bearing on the feeding of young pigs on crushed barley, with which was associated special pig meals prepared by the Metropolitan Abattoirs Board. It will be recalled that these tests proved highly favorable to these meals, which appear to supply in suitable combination those protein compounds so essential to the development of all young animals. Since that time these meals have been tested comparatively with skim milk, the usual nitrogenous foodstuff fed to young pigs, but which is not always available to pigbreeders in adequate quantities. It is now suggested that these tests show definitely that the Metropolitan Abattoirs Board's pig meal is both an effective and reasonably cheap substitute for skim milk.

As in the preceding tests, we took 12 young pigs and divided them up into three lots—A, B, and C—the initial weights of which were as follows:—

*Weights of Young Pigs on January 24th.*

LOT A.	LOT B.	LOT C.
54lbs.	52lbs.	62lbs.
50lbs.	47lbs.	58lbs.
51½lbs.	57½lbs.	52½lbs.
42½lbs.	38½lbs.	54½lbs.
Means .. 49½lbs.	48½lbs.	56½lbs.

It should be stated that whilst lots A and B consisted wholly of young sows, lot C consisted of boars only, and showed a sensibly greater mean weight than the other two. In consequence of their greater weight, pigs of lot C received uniformly ½lb. of crushed barley more than pigs of the lighter pens. This fact does not in any way affect results, since the rations were interchanged every fortnight, as is indicated below in Table I.

The tests extended over six weeks, and the rations supplied are indicated in Table I.

TABLE I.—*Showing Daily Rations fed to Young Pigs between January 24th and March 6th.*

	Barley. lbs.	Skim Milk. lbs.	Pig Meal. lbs.	Pig Compo. lbs.
January 24-February 6—				
Lot A . . . . .	2½	5½	—	—
Lot B . . . . .	2½	—	½	—
Lot C . . . . .	3½	—	—	½
February 7-20—				
Lot A . . . . .	3½	—	½	—
Lot B . . . . .	3½	—	—	½
Lot C . . . . .	4½	5½	—	—
February 21-March 6—				
Lot A . . . . .	4½	—	—	½
Lot B . . . . .	4½	5½	—	—
Lot C . . . . .	5	—	½	—

Thus in each consecutive fortnight the rate of feeding was varied in order to meet the requirements of rapidly-growing animals, and to test the relative values of the foodstuffs rich in protein. In this connection it may be stated that in nutritive value ½ lb. of pig meal or ½ lb. pig compo. corresponds, roughly to 5½ lbs. of skim milk; and that if the latter be valued at 2d. per gallon, both meals are slightly cheaper as foodstuffs at £19 and £18 5s. a ton respectively.

The mean increases in weight of the three lots during successive fortnights are shown in Table II.

TABLE II.—*Showing Mean Increases in Weight during Feeding Tests.*

	Lot A.	Lot B.	Lot C.
Barley and Skim Milk—			
	lbs.	lbs.	lbs.
Mean starting weight . . . . .	49.50	74	71.87
Mean closing weight . . . . .	61.75	88.25	90.75
Mean fortnightly increase . . . .	12.25	14.25	18.88
Mean increase per diem . . . . .	0.87	1.02	1.35
Barley and Pig Meal—			
Mean starting weight . . . . .	61.75	48.75	90.75
Mean closing weight . . . . .	79.12	59	109.37
Mean fortnightly increase . . . .	17.37	10.25	18.62
Mean increase per diem . . . . .	1.24	0.73	1.33
Barley and Pig Compo.—			
Mean starting weight . . . . .	79.12	59	56.75
Mean closing weight . . . . .	91	74	71.87
Mean fortnightly increase . . . .	11.88	15	15.12
Mean increase per diem . . . . .	0.85	1.07	1.08

Finally, mean increases from the different nitrogenous foodstuffs under test have been summarised in Table III.

TABLE III.—*Showing Mean Increases Attributable to Use of Nitrogenous Foodstuffs in Conjunction with Crushed Barley.*

	Mean Starting Weight. lbs.	Mean Fortnightly Increase. lbs.	Mean Increase per Diem. lbs.	Mean Percentage Increase. %
Barley and skim milk ..	65.12	15.12	1.08	23.22
Barley and pig meal ..	67.08	15.42	1.10	22.98
Barley and pig compo. .	64.96	14.00	1.00	21.55

It will be noted from the above results that there is very little to choose between these three foodstuffs. On a percentage basis the advantage is slightly with skim milk, and on mean increase per diem with pig meal. The earlier tests support the view generally held by pigbreeders, namely, that you cannot rear weaners to advantage on crushed grain alone; and the present tests show very definitely that the meals prepared by the Metropolitan Abattoirs Board are, in this connection, very effective substitutes for skim milk when the latter is not available. It follows, therefore, that the pigbreeder need not necessarily be a dairyman, as is sometimes thought, and that any farmer who grows grain can, if he wishes, rear healthy young pigs without the assistance of skim milk.

It may not be without interest to note some other results of these feeding tests. Twelve young pigs, aggregating at the outset 620lbs. (an average of 51.67lbs. per head), were fed under careful supervision for a period of six weeks, at the end of which time their aggregate weight was represented by 1,154½lbs., or 96.21lbs. per head. This represents an average daily increase in live weight of 1.06lbs. During this period they consumed food as follows:—

37bush. 40lbs. barley, at 2s. 6d. a bushel .. . . .	4	14	6
84lbs. pig meal, at £19 a ton .. . . .	0	14	3
84lbs. pig compo., at £18 5s. a ton .. . . .	0	13	9
	£ s. d.		
924lbs. skim milk, at 2d. a gallon .. . . .	0	15	5
Total .. . . .	£6	17	11

Thus the total value of the foodstuffs responsible for the manufacture of 534½lbs. of pork (live weight) was £6 17s. 11d., or 3.1d. per lb. To this should be added the cost of services, interest on buildings, &c., which, when pigs are kept on a large scale, I estimate not to exceed 3d. per week per pig, or, in the present case, an addition of 18s., which raises cost of production of pork to 3.5d. per lb. live weight. With recent prices ranging from 8d. to 1s. per lb. for young pork, there is no question as to the profitableness of the feeding venture.

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But let us look at the matter from another point of view. In my judgment, the growing on our farms of secondary cereals—barley and oats—is intimately bound up with the economic possibility of marketing them advantageously through livestock; and pigs dispose of barley to better advantage than any other form of livestock. From the results of these tests, it is easy to determine the value secured for barley at current pig prices.

Costs, other than that of barley, involved in the production of 534.5lbs. of pork (live weight) may be summarised as follows:—

	£	s.	d.
924lbs. of skim milk, at 2d. a gallon . . . . .	0	15	5
84lbs. of pig meal, at £19 a ton . . . . .	0	14	3
84lbs. of pig compo., at £18 5s. a ton . . . . .	0	13	9
Services, interest, &c. . . . .	0	18	0
Total . . . . .	£3	1	5

The difference between the market value of 534½lbs. of live pork and £3 1s. 5d. will represent, therefore, the value realised for 37bush. 40lbs. of barley. This has been indicated in Table IV. at recent range of prices for young pigs.

TABLE IV.—*Showing value Realised for Cape Barley in Feeding Tests at Current Range of Prices for Young Pork.*

Recent Prices of Pork.	Calculated Values of 534½lbs. of Pork.	Values Realised for Barley Fed. Per 37bush. 40lbs.	Per Bush.
£ s. d.	£ s. d.	£ s. d.	£ s. d.
0 0 6	13 7 3	10 5 10	0 5 5
0 0 7	15 11 9	12 10 4	0 6 7
0 0 8	17 16 4	14 14 11	0 7 10
0 0 9	20 0 11	16 19 6	0 9 0
0 0 10	22 5 5	19 4 0	0 10 2

Thus, with young pork at 6d. a lb., barley fed to young pigs realised 5s. 5d. per bushel, and at 10d. a lb., 10s. 2d. a bushel, as against current market values of 2s. 3d. to 2s. 6d. a bushel. The inference appears clear that if means could be found to establish a great export business in pork, hundreds of thousands of acres in South Australia could be put under barley as a second crop to very great advantage.

#### ABATTOIRS MEALS TO SOWS ON THEIR LITTERS.

When the matter was under consideration, it occurred to me that whilst these Abattoirs meals did not seem likely to prove very useful for grown pigs on fattening rations, they would probably prove suitable for sows on their litters. Tests in this direction were accordingly arranged for.



I had intended originally that six sows that had recently farrowed should be fed until weaning-time (a period of, say, nine weeks) on the following lines:—

2 sows (A) to receive crushed barley only.

2 sows (B) to receive crushed barley and a daily allowance of 1½lbs. of pig meal.

2 sows (C) to receive crushed barley and a daily allowance of 1½lbs. of pig compo.

Unfortunately, the Manager of Turretfield (Mr. F. E. Waddy), who had the oversight of these tests, was unable to secure at the time the requisite number of suitable sows, and we had to be satisfied with single sows in each section. From the point of view of results, this is, of course, unfortunate, since in such matters individual temperament, character, health, &c., are bound to be disturbing factors, which, in the present instance, will escape control. It follows that the results cannot be accepted definitely as those having reference to the feeding of young pigs. These results have been summarised in Table V.

TABLE V.—*Showing Summary of Results of Feeding Sows on Their Litters with Barley and with Barley and Abattoirs Meals Respectively.*

Feed.	Sow A. Barley only.	Sow B. Barley and 1½lbs. Pig Meal Daily.	Sow C. Barley and 1½lbs. Pig Compo. Daily.
Number of piglets . . . . .	8	9	8
Original total weight of piglets . . . .	36.125lbs.	40.69lbs.	46.94lbs.
Mean original weight . . . . .	4.52 "	4.52 "	5.87 "
Total weight at weaning . . . . .	171.5 "	273 "	254.5 "
Mean weight at weaning . . . . .	21.44 "	30.33 "	31.8 "
Total increase in weight (63 days) . .	135.375 "	232.31 "	207.56 "
Mean increase (63 days) . . . . .	16.92 "	25.81 "	25.94 "
Mean increase per diem . . . . .	0.27 "	0.41 "	0.41 "

To the extent that they may be depended upon, these results are very striking, and again wholly in favor of the Abattoirs meals. The litter of the sow fed on barley alone, although consisting of one less than that of the sow to whose ration pig meal had been added, and starting at the same mean individual weight of 4½lbs., closes the experiment with an average weight per weaner of 21.44lbs., against an individual weight of 30.33lbs. in the other litter. In final summary we have over a period of 63 days mean daily individual increases of

0.27lbs. for the litter of the sow fed on barley alone, as against increases of 0.41lb. for the litters of sows supplied with Abattoirs meals in addition to barley.

From the point of view of cost of production, the results are equally satisfactory. These have been summarised in Table VI.

TABLE VI.—*Showing Relative Cost of Feeding Litters under these Tests.*

	Sow A.	Sow B.	Sow C.
Feed supplied . . . . .	773½lbs. barley	710½lbs. barley	574½lbs. barley
“ . . . . .	—	94½lbs. pig meal	87lbs. pig compo.
Increase in weight of litter ..	135.37lbs.	232.31lbs.	207.56lbs.
Lbs. of barley to 1lb. increase	5.71 “	3.06 “	2.77 “
Lbs. of pig meal to 1lb. increase	—	0.41 “	—
Lbs. pig compo. to 1lb. increase	—	—	0.42 “
Value barley per lb. increase	3.43d.	1.84d.	1.66d.
Value pig meal per lb. increase	—	0.84d.	—
Value pig compo. per lb. increase	—	—	0.82d.
Total value food per lb. increase	3.43d.	2.68d.	2.48d.

It follows that when pig meals formed part of the rations of sows on litters, the piglets developed more rapidly than when the mothers received barley alone, and the cost of the feed supplied per 1lb. increase in live weight cost from ¾d. to 1d. less than when barley only was supplied.

#### CONCLUSIONS.

In conclusion, I feel that if the present composition of these meals can be maintained, they can safely be recommended to all those whose business it is to rear young pigs. And in this connection the following daily rations may be recommended, subject, of course, to the use of first-class materials:—

#### *For Sows on Average Litters.*

Six and a half pounds of crushed barley and 1½lbs. of pig meal daily. The daily allowance of barley should be increased each week by about 1½lbs. until weaning time.

#### *For Young Growing Pigs.*

	Barley. lbs.	Pig Meal. lb.
50lbs. live weight . . . . .	2	½
60lbs. live weight . . . . .	2½	¾
70lbs. live weight . . . . .	3½	¾
80lbs. live weight . . . . .	4½	¾

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## EXPERIMENTAL FARM HARVEST REPORTS.

### KYBYBOLITE EXPERIMENTAL FARM.

[By W. J. SPAFFORD, Superintendent Experimental Work, and  
L. J. COOK, Manager.]

This farm is situated in the hundred of Binnun, in the south-east of the State, and contains about 1,000 acres of land immediately surrounding the old Kybybolite Sheep Station. The land is more or less undulating, and is all arable; the great bulk of it contains a very large proportion of ironstone rubble, with its corresponding crop-raising difficulties, whilst the remaining portion is heavy-working "crabhole" land.

#### THE SEASON, 1920.

The season at Kybybolite was a rather peculiar one, and the rainfall was such as to make crop growing very difficult, because very little rain fell in the early autumn, the winter rains were a bit heavy, and then fell away again in the spring. In these particular conditions good autumn rains are necessary to allow of the land being properly prepared for cropping, for without this moisture these soils set like cement, and none of the cultivating implements will penetrate the surface. Further, when winter rains are heavy, the soil remains waterlogged for a long time, and unless these are followed by good spring rains, crops—particularly the cereals—never make good growth. The total rainfall for the year (20.87in.), although

lower than the average for the district, would have been quite sufficient to produce good cereal crops had its distribution been better.

The following table sets out in detail the rainfall obtained at the farm since 1906:—

*Rainfall Distribution at Kybybolite, 1906-1920.*

	Means, 1906- 1914.	1915.	1916.	1917.	1918.	1919.	1920.	Means, 1906- 1920.
	In.	In.	In.	In.	In.	In.	In.	In.
January .....	0.35	0.54	1.29	0.45	0.29	0.16	0.08	0.40
February .....	0.90	1.15	0.28	2.81	0.23	2.35	0.07	1.00
March .....	1.85	0.42	0.03	1.17	0.27	0.84	0.98	1.24
April .....	1.54	1.12	2.07	0.74	1.38	0.06	0.38	1.31
May .....	2.60	1.82	0.69	4.72	2.48	2.09	2.85	2.54
June .....	2.76	6.55	3.56	1.33	3.52	1.53	4.31	3.04
July .....	3.29	1.68	2.68	4.47	2.42	2.21	3.04	3.07
August .....	2.51	4.11	2.94	2.69	2.76	1.08	4.29	2.70
September .....	2.82	4.18	2.77	2.96	0.53	2.53	2.44	2.72
October .....	1.87	1.20	2.20	2.78	2.70	1.64	0.98	1.89
November .....	1.66	0.52	3.28	2.21	0.65	0.29	0.91	1.52
December .....	1.34	0.01	1.74	0.36	1.09	0.82	0.54	1.11
Total rainfall	23.29	23.30	23.53	26.69	18.32	15.60	20.87	22.54
Totals "Useful" rain (April- November)	19.05	21.18	20.19	21.90	16.44	11.43	19.20	18.79

In what we know as our "cereal" districts, the yield of cereal crops can usually be estimated on the amount of rain which falls between April and November, and even then it is dependent, to a large extent, on the distribution of that rainfall over the period; but in the peculiar soil conditions of this farm, where the average annual rainfall is comparatively good, the success of these crops depends wholly on the distribution of this "useful" rain. In the next table the distribution of the April-to-November rainfall is set out, and it clearly shows excessive winter rains, but does not disclose that this was immediately followed by 4.29in. in August, which kept the land thoroughly waterlogged until the end of September:—

*Distribution of "Useful" Rain—Kybybolite, 1920.*

	1920.	Means, 1906-1920.
	Ins.	Ins.
Seeding rains (April-May) .. . . .	3.23	3.85
Winter rains (June-July) .. . . .	7.35	6.11
Spring rains (August-October) .. . . .	7.71	7.31
Early summer rains (November) .. . . .	0.91	1.52
Total "useful" rain .. . . .	19.20	18.79

## CROPS.

The main crops grown at this farm are still, of necessity, the cereals, and particularly so in such a season as this one, when the land was so wet in the spring that it could not be cultivated for summer-growing crops.

*Green Forage Crops.*—To supplement the natural feed in the winter, which, as a rule, is really poor, our practice has been to cultivate lightly some of the fields, and seed them with a mixture of cereals, to be used as grazing by the farm livestock. By the end of April, 32 acres, in Fields Nos. 3, 3B, and 16 had been cultivated and seeded with a mixture of oats and rye, and about the middle of May a block of 50 acres in Field No. 19 was also seeded with this mixture for green feed. By the middle of July these crops had made splendid growth, particularly the 20 odd acres in Nos. 3 and 3B, and had carried a lot of livestock, and, despite the extreme wetness of August, continued to make good growth, and stood much feeding-off.

*Pea Crops.*—The only field that carried a crop of peas was No. 4c, which was seeded with early dun field peas in the last week in July, at the rate of 2bush. of seed with 1cwt. superphosphate per acre. Only 6bush. 11lbs. of peas were harvested from 4.05 acres in this field, for an average yield of 1bush. 32lbs. per acre.

*Linseed Crops.*—A series of tests, with various rates of seeding, were again conducted with linseed, and although the crops appeared to withstand the wetness of the early spring very well, and at the end of September appeared to be rather promising, the want of sufficient rain in the early summer dried up the plants at flowering time, and no seed was produced.

*Wimmera Rye Grass (*Lolium subulatum*).*—The block sowed with this grass in 1919 reseeded itself well, and produced a dense mass of growth more than 2ft. high, which carried quite a lot of livestock. The seed collected from this plot last year was broadcasted on to 15 acres in Field No. 15, with the barley sown for grain, and germinated well.

*Ensilage Crops.*—Due to the want of a silo, we have been unable in the past to store feed as ensilage at this farm; but this deficiency has now been corrected, and for the first time fodder has been manufactured into this form of forage. No crop was grown for the purpose, and as the ordinary crops did not make rank, or even strong, growth, much trouble was experienced in securing sufficient crop to store; and as only headlands of cereal crops, and odd pieces were cut, it took

25.27 acres to produce 44 tons 10cwts. 84lbs. of green crop, for an average return of 1 ton 15cwts. 24lbs. per acre.

*Hay Crops.*—Only a very small area was sown for hay, and some difficulty was experienced in securing enough well-grown crop to cut for this purpose. In the end, the bulk of the hay secured consisted of oat crops, and details of all harvested in this way are to be seen below:—

*Hay Yields, Kybybolite, 1920.*

Crop.	Field Grown.	Area. Acres.	Total Yield.			Yield per Acre.		
			T.	C.	L.	T.	C.	L.
Oats .....	No. 9F	1.94	3	9	56	1	15	92
Oats .....	No. 6C	7.88	9	17	42	1	5	5
Oats .....	No. 20	28.14	24	10	98	0	17	50
Oats .....	No. 8	18.09	12	1	28	0	13	38
Wheat .....	No. 16C	10.00	6	6	28	0	12	70
Farm average .....	—	66.05	56	5	28	0	17	4

The next table shows the returns secured from the two types of cereal hay—oats and wheat—over the three-year period, 1918 to 1920:—

*Cereal Hay Crops, Kybybolite, 1918-1920.*

	Oaten Hay.		Wheaten Hay.		Farm
	Tons cwts. lbs.		Tons cwts. lbs.		Average.
1918 .....	1	4 97	1	5 30	1 2 58
1919 .....	1	11 26	1	1 89	1 8 45
1920 .....	0	17 92	0	12 70	0 17 4
Means .....	1	4 72	0	19 100	1 2 73

Although this season's hay crop only averaged 17cwts. 4lbs. per acre, its inclusion in the mean average yield for the farm only reduces that figure by 1cwt. per acre, and for the 11-year period, 1910 to 1920, the average return for hay is 1 ton 5cwts. 26lbs. per acre, as is set out in detail in the next table:—

*Hay Returns, Kybybolite, 1910-1920.*

Hay Returns, Nyagoodu, 1910-1920.						
Year.	Total Rainfall.	"Useful" Rainfall.	Area. Acres.	Total Yield.		Yield. per Acre.
	In.	In.		Tons cwt.	lbs.	Tons cwt.
1910 .....	23.35	21.08	106.13	88	19 28	0 18 85
1911 .....	22.23	14.72	94.04	136	6 110	1 9 28
1912 .....	20.83	18.23	26.59	67	7 70	2 10 76
1913 .....	18.44	13.93	108.55	166	11 0	1 10 77
1914 .....	11.94	8.43	109.00	90	1 0	0 16 59
1915 .....	23.30	21.18	108.66	111	14 5C	1 0 65
1916 .....	23.53	20.19	77.35	135	1 0	1 14 102
1917 .....	26.69	21.90	96.77	49	9 0	0 10 25
1918 .....	18.32	16.44	152.85	172	1 70	1 2 58
1919 .....	15.60	11.43	148.81	211	7 14	1 8 45
1920 .....	20.87	19.20	66.05	56	5 28	0 17 4
Means .....	20.92	16.98	—	—	—	1 5 26

# WHAT IS Sweet Clover

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# BRUNNINGS

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*Oat Crops.*—It is usual to grow a fairly large assortment of varieties of oats at this farm, but practically all varieties were cut for hay this season, and as a matter of fact only two varieties were harvested for grain. Their behavior is set out below:—

*Oat Variety Yields, Kybybolite, 1920.*

Variety.	Field Grown.	Area, Acres.	Total Yield.	Yield per Acre.
Calcutta. . . . .	No. 4B	5.33	174 9	32 27
Algerian . . . . .	No. 20C	29.02	416 18	14 14
Algerian . . . . .	No. 9B	1.94	22 14	11 21
Farm average	—	36.29	613 1	16 36

The season proved a very poor one for other cereal crops, but with oats for grain it was just an average one, and the yield secured—16bush. 36lbs. per acre—is exactly the same as the mean yield per acre for the period 1910 to 1920, details of which are exhibited in the next table:—

*Oat Returns, Kybybolite, 1910-1920.*

Year.	Total Rainfall.	“Useful” Rainfall.	Area. Acres.	Total Yield.		Yield per Acre.
	In.	In.		Bush.	lbs.	Bush. lbs.
1910 . . . . .	28.35	21.08	77.00	1,001	0	13 0
1911 . . . . .	22.23	14.72	60.91	828	13	13 24
1912 . . . . .	20.83	18.23	103.00	3,450	36	33 20
1913 . . . . .	18.44	13.98	94.55	1,460	10	15 18
1914 . . . . .	11.94	8.43	6.00	61	3	10 7
1915 . . . . .	23.30	21.18	79.74	1,251	25	15 28
1916 . . . . .	23.53	20.19	61.94	1,388	39	22 17
1917 . . . . .	26.69	21.90	20.66	154	13	7 19
1918 . . . . .	18.32	16.44	36.93	554	25	15 1
1919 . . . . .	15.60	11.43	50.77	1,144	34	22 22
1920 . . . . .	20.87	19.20	36.29	613	1	16 36
Means . . . . .	20.92	16.98	—	—	—	16 36

*Barley Crops.*—Barley crops have never been good at this farm—indeed, there is only one year, 1912, when even very fair returns were secured—and this season was no exception to the preceding ones. The extreme wetness of the land was against the possibility of good barley crops, and was so bad that the fields sown at the end of July—Nos. 5 and 6E—did not germinate, and they had to be resown in the last week of August. Field No. 15, which could not be prepared earlier, was not seeded until the first week in September. Only one variety of barley was grown this year, and the returns secured from the various fields totalled 474bush. 7lbs. from 55.77 acres, for an average yield of 8bush. 25lbs. per acre. The next table shows in



detail all of the barley crops grown at Kybybolite since and including 1910:—

*Barley Returns, Kybybolite, 1910-1920.*

Year.	Total Rainfall. In.	"Useful" Rainfall. In.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
1910 .. . . .	28.35	21.08	45.39	299 29	6 30
1911 .. . . .	22.23	14.72	58.76	552 16	9 20
1912 .. . . .	20.83	18.23	50.00	1,500 0	30 0
1913 .. . . .	18.44	13.93	35.00	527 0	15 3
1914 .. . . .	11.94	8.43	3.02	37 48	12 29
1915 .. . . .	23.30	21.18	50.28	789 39	15 35
1916 .. . . .	23.53	20.19	43.24	273 37	6 17
1917 .. . . .	26.69	21.90	66.31	304 41	4 30
1918 .. . . .	18.32	16.44	35.08	266 48	7 31
1919 .. . . .	15.60	11.43	39.71	650 1	16 19
1920 .. . . .	20.87	19.20	55.77	474 7	8 25
Means . . . . .	20.92	16.98	—	—	12 4

*Rye Crops.*—A little more rye than usual was grown this year, and it was fortunate that this was so, because not enough grain to be used in admixture with other cereals for green feed would have been secured but for the fact that 14.71 acres of this crop were left to mature grain. The yields received from the crop since 1914 are set out in the next table:—

*Rye Returns, Kybybolite, 1914-1920.*

Year.	Total Rainfall. In.	"Useful" Rainfall. In.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
1914 .. . . .	11.94	8.43	6.00	90 16	15 3
1915 .. . . .	23.30	21.18	7.27	57 44	7 48
1916 .. . . .	23.53	20.19	8.20	35 3	4 14
1917 .. . . .	26.69	21.90	—	Failure	
1918 .. . . .	18.32	16.44	4.62	52 0	11 15
1919 .. . . .	15.60	11.43	7.23	37 7	5 8
1920 .. . . .	20.87	19.20	14.71	47 48	3 14
Means . . . . .	20.03	16.97	—	—	6 40

*Wheat Crops.*—All wheat crops sown for grain were seeded on autumn ploughing before the middle of June, and although the winter was so wet, all crops germinated fairly well, except a rather large portion of Field No. 20A, which had to be resown at the end of July.

The yields secured varied from almost 30bush. per acre to as low as 4bush. 21lbs., as is to be seen below:—

*Wheat Variety Yields, Kybybolite, 1920.*

Variety.	Field Grown.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
White Tuscan. . . . .	No. 4D	4.11	122 38	29 50
White Tuscan. . . . .	No. 6A	5.78	103 57	17 59
Federation . . . . .	No. 9E	1.94	29 53	15 24
Queen Fan (reseeded) . .	No. 20A	29.02	323 41	11 9
Queen Fan . . . . .	No. 12	11.82	101 59	8 38
Yandilla King . . . . .	No. 12	7.52	61 56	8 14
Federation . . . . .	No. 12	7.96	49 43	6 15
Crossbred 53 . . . . .	No. 12	4.22	18 21	4 21
Farm average . . . . .	—	72.37	812 8	11 13

This low yield, of only 11bush. 13lbs. per acre, appears to have been wholly due to the very wet winter, which delayed the growth of the crops and encouraged weeds, and to the comparatively dry spring, which was not moist enough to allow the plants to recover properly from the setback received earlier.

The yields obtained from the wheat crops at this farm since 1910 are set out in detail in the next table:—

*Wheat Returns, Kybybolite, 1910-1920.*

Year.	Total Rainfall. In.	"Useful" Rainfall. In.	Area. Acres.	Total Yield. Bush. lbs.	Yield Per Acre. Bush. lbs.
1910 . . . . .	28.35	21.08	15.00	79 43	5 19
1911 . . . . .	22.23	14.72	17.15	232 45	13 34
1912 . . . . .	20.83	18.23	81.91	1,876 35	22 54
1913 . . . . .	18.44	13.93	48.20	1,288 56	26 44
1914 . . . . .	11.94	8.43	22.17	238 32	10 46
1915 . . . . .	23.30	21.18	79.64	882 31	11 5
1916 . . . . .	23.53	20.19	98.75	1,875 19	18 59
1917 . . . . .	26.69	21.90	70.46	231 29	3 26
1918 . . . . .	18.32	16.44	58.52	1,027 40	17 34
1919 . . . . .	15.60	11.43	78.26	1,190 50	15 13
1920 . . . . .	20.87	19.20	72.37	812 8	11 13
Means . . . . .	20.92	16.98	—	—	14 15

EXPERIMENTS WITH RAW ROCK PHOSPHATE.

Experiments to test the agricultural value of raw rock phosphates were commenced at Kybybolite in 1919, the rocks being tried containing (a) calcium phosphate and (b) aluminium phosphate, equivalent to about 18 per cent. of phosphoric acid, so being low-grade phosphates.

*Raw Rock Phosphates on Crops to be Harvested.*

For the testing of the rock phosphates on crops to be harvested, a rotation consisting of wheat (for hay)—peas, was laid down, in which both the wheat and pea crops are dressed with the same fertilisers, as is shown below:—

*Wheat—Peas Rotation.*

Plot.	1919.	1920.	1921.
1	Wheat—No manure	Peas—No manure	Wheat—No manure
1A	Peas—No manure	Wheat—No manure	Peas—No manure
2	Wheat—5cwts. lime 1ewt. super	Peas—5cwts. lime 1ewt. super	Wheat—5cwts. lime 1ewt. super
2A	Peas—5cwts. lime 1ewt. super	Wheat—5cwts. lime 1ewt. super	Peas—5cwts. lime 1ewt. super
3	Wheat—1ewt. super	Peas—1ewt. super	Wheat—1ewt. super
3A	Peas—1ewt. super	Wheat—1ewt. super	Peas—1ewt. super
4	Wheat—11cwts. alu- minium phosphate	Peas—1ewt. aluminium phosphate	Wheat—1ewt. aluminium phosphate
4A	Peas—11cwts. alumi- nium phosphate	Wheat—1ewt. aluminium phosphate	Peas—1ewt. aluminium phosphate
5	Wheat—11cwts. cal- cium phosphate	Peas—1ewt. calcium phosphate	Wheat—1ewt. calcium phosphate
5A	Peas—11cwts. cal- cium phosphate	Wheat—1ewt. calcium phosphate	Peas—1ewt. calcium phosphate

The results secured from these plots are:—

*Raw Rock Phosphate Tests on Wheaten Hay, Kybybolite, 1919-1920.*

Plot.	Manuring per Acre.	1919.			1920.			Means, 1919-1920.		
		T.	C.	L.	T.	C.	L.	T.	C.	L.
1.	No manure . . . . .	0	10	84	0	9	0	0	9	98
2.	5cwts. lime, 1ewt. superphosphate	1	6	105	0	17	35	1	2	14
3.	1ewt. superphosphate . . . . .	1	7	28	0	13	0	1	0	14
4.	11cwts. aluminium phosphate rock	1	6	91	0	12	91	0	19	91
5.	11cwts. calcium phosphate rock .	1	3	7	0	11	0	0	17	3

*Raw Rock Phosphate Tests on Peas, Kybybolite, 1919-1920.*

Plot.	Manuring per Acre.	1919.		1920.	Means, 1920.
		B.	L.		
1.	No manure . . . . .	0	30	Total Failure.	B. L.
2.	5cwts. lime, 1ewt. superphosphate . .	1	17		0 15
3.	1ewt. superphosphate . . . . .	1	4		0 38
4.	11cwts. aluminium phosphate rock . .	1	30		0 32
5.	11cwts. calcium phosphate rock . . .	0	39		0 45
					0 19

## ORCHARD NOTES FOR JULY FOR THE SOUTHERN DISTRICTS.

[By C. H. BEAUMONT, Orchard Instructor and Inspector, Etc.,  
Southern Districts.]

Ploughing and pruning will be continued; also any planting remaining should be completed.

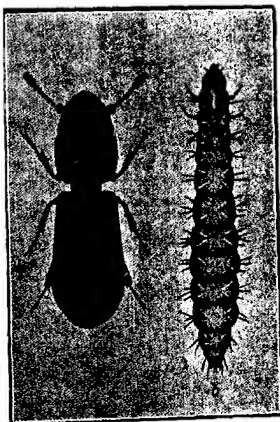
After pruning it is advisable to gather the cuttings into heaps at once, so that they can be readily collected by the dray or fed to the burner later on. It is of great advantage to use a burner similar to that in use on many vineyards for destroying cuttings.

*Olives*.—Picking and dispatch should be continued. All growers of olives should make a supply of oil for themselves, or even for their district. The method of doing this was explained in this *Journal*, January number, this year.

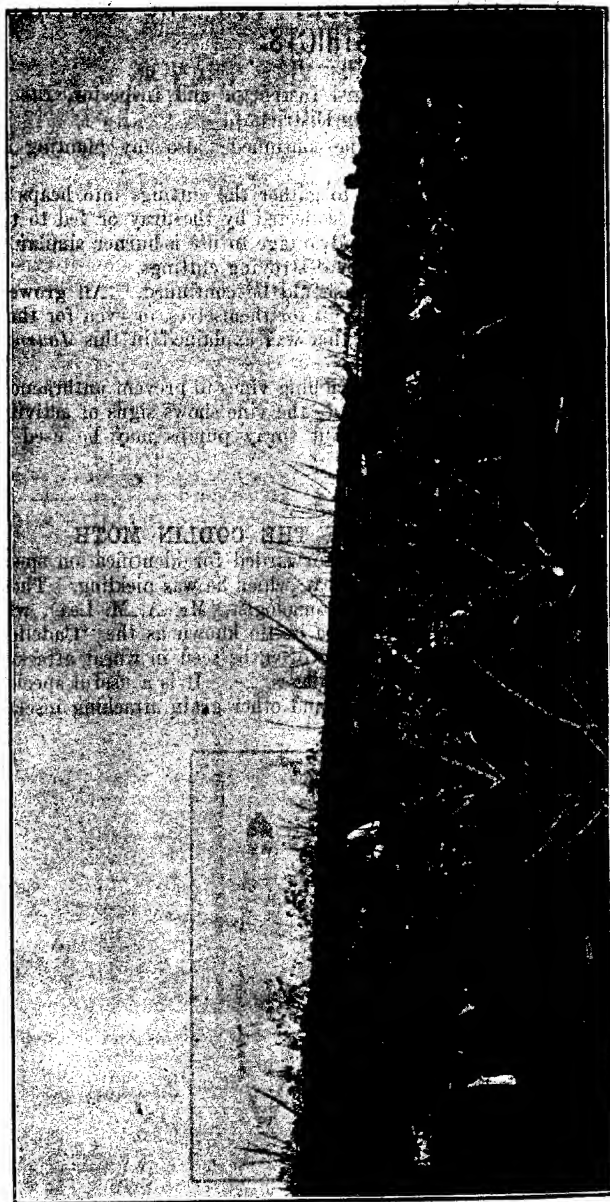
It is advisable to prepare for swabbing vines to prevent anthracnose or scab. This should be done before the vine shows signs of activity. The swabbing is most effective, but spray pumps may be used if thought more speedy.

### AN INSECT ENEMY OF THE CODLIN MOTH.

A correspondent from Mannum forwarded for identification specimens of grubs taken out of seed wheat, which he was pickling. These were submitted to the Museum Entomologist (Mr. A. M. Lea), who reports that these grubs belong to a beetle known as the "Cadelle" (*Tenebroides mauritanicus*). It may often be seen in wheat attacked by other insects, in codlin moth bandages, &c. It is a useful species, inasmuch as it feeds on true wheat and other grain attacking insects, on codlin grubs, &c.



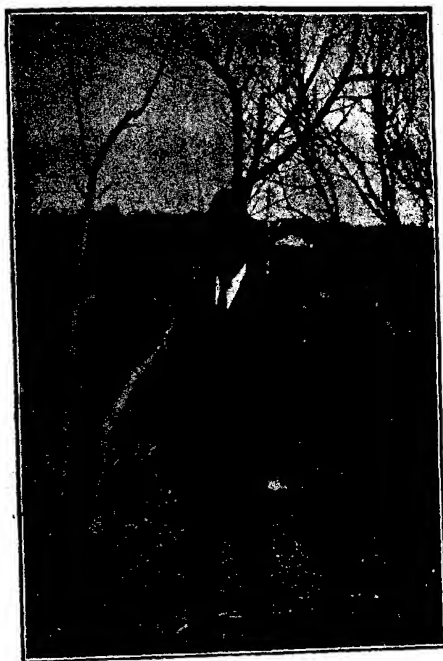
(a) *Tenebroides mauritanicus*.  
(b) Larva of same.



Fruit Tree and Grape Vine Competition. recently held under the auspices of the River Murray Branches of the Agricultural Bureau.  
A view showing competitors at work in the Orchard of Mr. H. Lehmann of Walkerie.

## FRUIT TREE AND GRAPE VINE PRUNING COMPETITIONS ON THE RIVER MURRAY SETTLEMENTS.

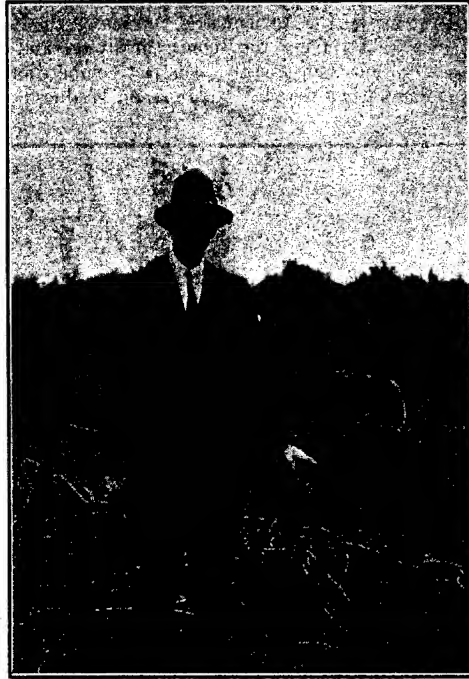
The series of Fruit Tree and Grape Vine Pruning Competitions arranged by Branches of the Agricultural Bureau on the River Murray settlements were held during the month of June, and from every point of view were most successful. District competitions were held at Waikerie on Tuesday, June 7th; Moorook, on Wednesday, June 8th;



Mr. H. von Bertouch, Winner of the Silver Cup presented by Mr. H. S. Taylor, of Renmark, for the Champion Fruit Tree Pruner at the recent competitions held under the auspices of the River Murray Branches of the Agricultural Bureau.

Berri, on Friday, June 10th; and Renmark, on Saturday, June 11th. At each of these centres the tests created considerable local interest, and proceedings were watched by a large number of growers. The first, second, and third prize winners in each of these series of district competitions were eligible for entry in the championship competitions, which were held at Berri on Tuesday, June 14th. As was the case

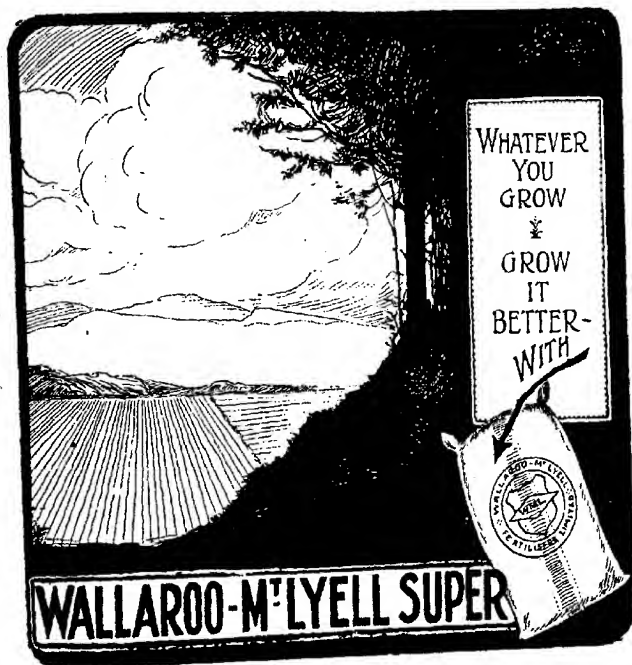
with the district competitions, the championship events were well attended by representatives from practically every irrigation settlement on the river in South Australia. The various classes and points on which the judging was done have already been published in the May issue of the *Journal*, page 845. At the request of a meeting of



Mr. L. A. Chapple, Winner of the Silver Cup presented by Mr. H. S. Taylor for the Champion Grape Vine Pruner, at the recent competitions held under the auspices of the River Murray Branches of the Agricultural Bureau.

representatives of Branches on the Murray, Messrs. H. Levien, of Renmark, and Gerald Beverley, of Pyap, undertook the judging. Owing to illness in his family, Mr. Beverley was unfortunately unable to continue his judging right through the competitions, and in his place at Renmark, Mr. Levien had the assistance of Mr. C. G. Savage (manager of the Government Experimental Orchard), and at the championship events at Berri Mr. Levien was assisted by Mr. W. R. Lewis. The cups presented by Mr. H. S. Taylor, of Renmark, for the champion pruners, were awarded to Mr. H. von Bertouch (Berri) in the tree section, with Mr. L. A. Chapple (Berri) as runner-up; and Mr. L. A. Chapple (Berri) in the vine section, with Mr. J. Carpenter (Renmark) runner-up. At the completion of the championship events, which were attended by the Horticultural Instructor (Mr. Geo. Quinn) and the Secretary

of the Advisory Board (Mr. H. J. Finnis), representing the Department of Agriculture, a meeting was held in the Berri Institute. At this meeting Mr. Levien presented an extensive report dealing with the district and championship events. At the invitation of the committee, Mr. H. S. Taylor, the donor of the championship cups, handed the awards to the winners. The Horticultural Instructor, by request, took the opportunity of making observations on the general work done in the championship events. The results of the competitions, together with the judges' reports, will be published in a bulletin form for distribution amongst growers on the River Murray settlements.





## AGRICULTURAL EXPERIMENTS.

### REPORT FOR THE YEAR 1920-1921.

#### MOUNT BARKER.

[By W. J. SPAFFORD, Superintendent Experimental Work.]

(Conducted by Messrs. Pope Bros.)

The rotation of crops series of plots being conducted at Mount Barker is that of peas—potatoes—rape—wheat, and the plots have now carried their fourth crops.

The manuring per acre of the various crops has been:—Peas, 1cwt. superphosphate and 10cwts. lime. Potatoes—the plot is divided into smaller plots—receiving (a) 15 tons farmyard manure, 2cwts. superphosphate; (b) 15 tons farmyard manure; (c) 4cwts. superphosphate, 2cwts. dried blood; (d) 8cwts. superphosphate; (e) no manure. Rape—1cwt. bonedust. Wheat—2cwts. superphosphate.

*Wheat (Plot 1).*—On May 11th 90lbs. of Crossbred 53 wheat was drilled in with 2cwts. superphosphate per acre, and as the land became very wet after the crop had germinated, the plants suffered in their early stages; but to correct this, sheep were turned on to feed off the crop at the end of July and again at the end of August. These feedings, together with the stubble feeding in February, resulted in grazing equal to almost 1½ sheep per acre per year. On December 24th the crop was cut for hay, and resulted in a return of 2 tons 5cwts. 80lbs. of hay per acre. For the past four seasons the wheaten hay in these rotation-of-crops plots has given the following returns:—

#### *Wheaten Hay in Four-course Rotation—Mount Barker, 1917-1920.*

Year.	Hay per Acre.		
	T.	C.	L.
1917—With 2cwts. superphosphate per acre .. ..	1	2	69
1918—With 2cwts. superphosphate per acre .. ..	2	17	0
1919—With 2cwts. superphosphate per acre .. ..	2	9	0
1920—With 2cwts. superphosphate per acre .. ..	2	5	80
Means—1917-1920 .. . . . .	2	3	65

*Peas (Plot 2).*—On July 16th Early Dun field peas were seeded at the rate of 3bush. of seed with 1cwt. superphosphate per acre after the plot had received 10cwt. of lime per acre. This crop made splendid, strong, and healthy growth right up till flowering time, when the appearance of the fungus disease, *Ascochyta pisi*, in patches of the crop necessitated the feeding off of the crop to reduce the risk of infecting



Harvest of Potatoes at the Experimental Plots on Messrs. Pope Bros.' Farm, at Mount Barker. The crop averaged over 8 tons to the acre.

the pea crops of 1921. The unfortunate feature of being forced into the grazing of the peas, is that the continuity of the grain records of this crop was broken, and to date the returns from peas have been:—

*Pea Crop in Four-course Rotation—Mount Barker, 1917-1920.*

Year.	Grain per Acre.	
	Bush.	lbs.
1917—With 10cwt. lime, 1cwt. super	28	10
1918—With 10cwt. lime, 2cwt. super	15	15
1919—With 10cwt. lime, 1cwt. super	10	14
1920—With 10cwt. lime, 1cwt. super	Grazed	
Carried sheep at the rate of 1.52 per acre per year.		

*Potatoes (Plot 3).*—In early April, following the pea crop, the land was loosened, and  $1\frac{1}{2}$  bush. of oat screenings were broadcasted to the acre to produce green feed, and the resulting crop carried sheep at the rate of about one sheep per acre per year. On September 15th the block was ploughed between 8in. and 9in. deep, harrowed and cross-harrowed on September 24th, cultivated on October 14th, harrowed on October 26th, cultivated on November 15th, and after the good rains of November 27th again harrowed. Between December 10th and 17th the crop was planted, and was well harrowed soon after it had germinated. The manurial treatment has been the same for each plot in all of the past four seasons, so the results can be tabulated as follows:—

*Potatoes in Four-course Rotation—Mount Barker, 1918-1921.*

Year.	Yield per acre.														
	B			C			D			E					
	15 tons farmyard manure, 2cwt. super.			15 tons farmyard manure.			4cwt. super, 2cwt. dried blood.			8cwt. super.			No manure.		
	T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.
1918 . . .	6	7	56	6	2	84	4	19	0	4	16	0	3	9	0
1919 . . .	7	4	23	7	5	84	7	5	84	6	18	0	5	2	56
1920 . . .	4	2	56	4	4	0	4	14	56	5	7	28	0	19	28
1921 . . .	8	5	28	8	2	84	8	2	0	7	15	28	3	12	0
Means	6	9	98	6	8	91	6	5	35	6	4	14	3	5	77

Besides the above manurial tests with potatoes, Messrs. Pope Bros. have each year conducted some experiments on a comparatively small scale with potatoes. These plots have usually consisted of five rows of potatoes, 11.36 chains in length, and although a few of these plots



Specimens of the Snowflake Potatoes dug from the Experimental Plots on  
Messrs. Pope Bros.' Farm, at Mount Barker.

have been smaller, for the sake of regularity the yields are all shown as from plots of that size. The returns from these small plots are shown below:—

*Potatoes in Small Plots—Mount Barker, 1918-1921.*

Plots.	Yield per plot—5 rows, 11.36 chains long.											
	1918.			1919.			1920.			1921.		
	T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.
Small setts*	1	1	56	1	5	28	0	10	56	1	11	98
Large setts†	1	5	0	1	8	84	0	13	0	2	6	98
Cut setts . . .	1	7	56	—	—	—	—	—	—	—	—	—
Immature setts	—	—	—	1	10	70	0	13	84	—	—	—
Mature setts	—	—	—	1	7	21	0	10	0	—	—	—
Imported setts	—	—	—	—	—	—	—	—	—	2	2	11
Local setts	—	—	—	—	—	—	—	—	—	1	18	39

\* 1½cwt. small setts planted per plot.

† 6cwt. large setts planted per plot.

*Rape (Plot 4).*—For the first two years of these rotation-of-crops experiments Thousand Headed kale was used as the cultivated fodder crop, but it was found that it hardly suited the particular conditions of the farm, and so Dwarf Essex rape was used instead of it. In 1919, the first year that rape was tried, we unfortunately used local seed, which proved to be quite other than Dwarf Essex, and one month from germination it ran to flower, and sheep refused to eat it. The crop was ploughed in at once, and the plot was resown on November 15th with Dwarf Essex rape, and although this seeding was so late, the plot carried livestock at the rate of 2.35 sheep per acre per year. On September 23rd, 1920, Plot 4 was drilled with 5lbs. of Dwarf Essex rape and 1cwt. bonedust per acre, and although the crop made fair growth by Christmas time, the plot had only carried 1.35 sheep per acre per year, and the weather was so very hot from then onwards that practically no more growth was made. For the four years, 1917 to 1920, the cruciferous fodder crop in the rotation has been grazed as follows:—

*Cruciferous Fodder Crops in Rotation—Mount Barker, 1917-1920.*

Year.	Crop.	Manure per Acre.	Grazing.
			Sheep per Acre per Year.
1917 . . . .	Kale	1cwt. bonedust	0.93
1918 . . . .	Kale	1cwt. bonedust	2.69
1919 . . . .	Rape	1cwt. bonedust	2.35
1920 . . . .	Rape	1cwt. bonedust	1.35
Means . . .	—	—	1.83

## DOWNY MILDEW IN SOUTH AUSTRALIA.

The Consulting Vegetable Pathologist and Botanist (Professor T. G. B. Osborn, D.Sc.) during the month of May visited the Clare and Renmark areas, to examine the outbreak of downy mildew (*Plasmopara viticola*) in the field. As it was late in the season, in many of the vineyards the leaves were too far gone in autumn discoloration to show the fungus, though its presence was suspected; but in others it was sufficiently clear. In all cases mentioned below, the presence of downy mildew has been confirmed by microscopical examination.

On May 19th, at Springvale, he saw the fungus on nursery stock and trellised vines, its presence on Pedro and Grenache being specially clear.

At Sevenhills definite confirmation could only be obtained on a currant; leaves of other vines showed suspicious spots, but were too far gone to diagnose.

At the Stanley Wine Company's vineyard, near Clare, no certain diagnosis could be made, nor at Stanley Flat, north of Clare, where several currant blocks were examined. In this region the leaves were too far advanced.

On May 26th, at Renmark, he found certain evidence of downy mildew on currant and Gordo vines. Sultanas showed suspicious areas, but he has not been able to grow out the fungus from these specimens.

At Berri, downy mildew was found on Doradillo and Sultanas, both nursery stock and trellised vines; also in the Government Orchard in Gordo and Doradillo vines.

"The infection in all cases seen has been slight," Professor Osborn reports; "very distinct and restricted spots occurring on the leaves, which, after experience, one can recognise even after the diseased area is dead and the fungus no longer sporing."

"Unfortunately, the severity of infection one season is no guide as to the probable severity in the next; everything depends on the weather, and all growers should be aware of the danger. The Renmark growers were well warned after Mr. L. Buring's visit. Some had also been to Mildura, to see an epidemic outbreak for themselves."

At Berri Professor Osborn lectured to the Agricultural Bureau, showing specimens of the fungus collected locally, and found those present prepared to take due precautions.

"No vine-growing area in the State can be considered safe for next season," the Professor continues, "as the fungus has in Victoria and New South Wales given ample demonstration of its power to spread over long distances, and to appear in epidemic form in the first season if the weather conditions are suitable. That we in South Australia escaped so lightly this year is probably due to the arrival of the fungus late in the season."

## MURRAY BRIDGE HERD TESTING SOCIETY.

## RESULTS OF BUTTERFAT TESTS FOR MARCH, 1921.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during March.	Per Cow during March.	Per Cow October to March.	Per Herd during March.	Per Cow during March.	Per Cow October to March.
1/A	11-13	7-42	Lbs. 4,425-5	Lbs. 397-65	Lbs. 3,123-11	Lbs. 213-50	Lbs. 19-18	Lbs. 141-46
1/B	14	14	7,595	542-50	3,989-01	374-24	26-73	169-57
1/C	44-55	31-87	22,289	500-40	3,303-55	876-61	19-68	131-16
1/D	21	14-74	9,887-5	470-83	2,559-22	478-25	22-77	123-48
1/E	14	12	9,362	668-71	3,192-70	423-50	30-25	151-19
1/F	11	11	5,130-5	466-41	3,358-32	221-03	20-09	135-31
1/G	47-03	38-29	35,693	758-90	4,751-92	1,399-50	29-76	176-62
1/H	14	13	5,137-5	581-25	2,981-63	370-25	26-45	126-62
1/I	15	12	6,370-5	424-70	3,952-93	337-79	22-52	159-82
1/J	16	14-94	8,724-5	545-28	4,030-68	451-58	28-22	176-91
1/K	14	12	9,176	655-43	3,143-42	388-99	27-79	134-10
1/L	13	11-19	5,828	448-31	3,381-18	277-21	21-32	150-58
1/M	21	18-71	8,898	423-71	2,495-47	435-85	20-75	114-10
1/N†	—	—	—	—	—	—	—	—
1/O	27-06	19-65	9,876-5	364-92	1,943-65*	443-80	16-40	88-99*
1/P	21	16-77	9,685	461-19	1,925-43*	475-76	22-65	81-53*
1/Q†	—	—	—	—	—	—	—	—
MEANS (per cow per month) .....			530-26	559-68	—	23-60	23-97	—

\* For four months only.

† Withdrawn from society.

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## ADVISORY BOARD OF AGRICULTURE.

The monthly meeting of the Advisory Board of Agriculture was held on Friday, June 3rd, there being present Mr. C. J. Tuckwell (Chairman), Professor Arthur J. Perkins (Director of Agriculture), Colonel Rowell, Messrs. A. M. Dawkins, G. Jeffery, F. Coleman, and the Secretary (Mr. H. J. Finnis). An apology was received from Mr. W. S. Kelly.

*Manufacture of Sugar from Beet.*—The Millicent Branch asked that the Government should forward a truck of sugar beet grown on the local experimental plots to Maffra to be converted into sugar, returned to Millicent, and sold for local consumption. The Director of Agriculture (Professor Arthur J. Perkins) stated that the crop of sugar beet on the Millicent plots had been sold to Mr. Livingston, M.H.R., and that he understood that gentleman proposed sending the beet to Maffra for conversion into sugar. The Secretary was instructed to advise the Branch of Mr. Livingston's action.

*Planting Trees for Firewood.*—The Renmark Irrigation Trust sought advice on the planting of a firewood plantation on land which was irrigable and subject to flood in high rivers. The Conservator of Forests (Mr. W. Gill), to whom the matter was submitted, furnished a report for the Trust. The Secretary was instructed to inform the Trust that the Board had received a copy of the report sent to Renmark.

*Preservation of Natural Scrub.*—At the last Conference of Branches in the vicinity of Franklin Harbor the following resolution was carried:—"That, in the opinion of this Conference, the Government should, in opening up new hundreds, take steps to ensure the preservation of the natural scrub on any places that are likely to drift in the event of the timber being removed." The resolution was forwarded to the Land Board, noted, and returned to the Advisory Board.

*Advance to Settlers for Fallow.*—This matter was again brought forward by the Nunkeri and Yurgo Branch, who requested that an advance of 5s. per acre should be made to settlers for three seasons for land fallowed during July and August. The Board decided again to bring under the notice of the Minister of Agriculture its recommendation that advances under the Advances to Settlers Act should be made with a view to encouraging maximum areas being fallowed.

*Ayrshire Bull for Kybybolite.*—The Kybybolite Branch requested that as the Kybybolite Experimental Farm would shortly be introducing a new bull into its herd, an Ayrshire bull of the very best quality should be procured. The Director of Agriculture (Professor Arthur J. Perkins) stated that the department had the foundations of a very good Ayrshire herd at Kybybolite at the present time. There was no immediate need for the purchase of a new bull, but as soon as such need was felt, the department would endeavor to secure the best possible blood from Victoria. The Secretary was instructed to advise the Branch accordingly.

*Destination of Docked Wheat.*—In replying to a resolution carried by the last Franklin Harbor District Conference as to the ultimate



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destination of docked wheat, the Chairman of the Wheat Board (Mr. G. J. Smith) said:—"As much of the wheat docked for smut as is capable of treatment is cleaned and disposed of as f.a.q. wheat. The best of the bleached wheat is mixed in cargoes of wheat which is superior in weight and quality to the season's standard of 60½lbs. so as to produce cargoes of f.a.q., but this has to be done with great care, so as not to reduce the cargoes or consignments below the standard and risk a heavy dockage at the port of destination. All other inferior wheat (whether due to smut, foreign matter, bleaching, or weather damage), is, and will be, disposed of in the local markets for poultry and stock feeding or shipped overseas for realisation at the best possible prices obtainable."

*Appointment of Dairy Instructors.*—The Kongorong Branch resolved—"That it is highly desirable that the Department of Agriculture appoint two or more dairy experts to visit the dairy farms of the State, advising on herd improvement, production of foddors, milk and cream preservation, pig breeding, and calf raising and kindred matters." The resolution was submitted to the Minister of Agriculture, who stated that in view of the financial position no further additions to the dairy staff could be made at present. The Secretary was instructed to notify the Branch.

*Injury to Cattle in Railway Trucks.*—Recently the attention of the Advisory Board was drawn to the injury that was done to cattle travelling in trucks on the northern railway system. The Board suggested that less damage might result if stationmasters had the right to determine the number of cattle carried in each truck. The Railways Commissioner intimated that he did not think it advisable for stationmasters to have the discretionary power as suggested. He intimated that any new vans that were constructed would be built on the L van type and without roofs.

*Planting Olives in the Parilla Forest Reserve.*—The Conference of Pinnaroo Line Branches determined—"That the Government be asked to plant a certain area with olives on the Parilla Forest Reserve." The matter was referred to the Minister of Agriculture, who suggested that the residents should take advantage of the special bonus offered by the Government for the planting of olives. The Secretary was instructed to inform the Parilla Branch.

*Providing Roads for Mallee Settlers.*—The Secretary was instructed to bring under the notice of the Minister a communication from the Nunkeri and Yurgo Branch asking the Government to provide roads for the settlers in the mallee districts.

*Through Booking of Goods, Adelaide and Port Lincoln Railway Lines.*—Some time ago a resolution was carried at an Annual Congress asking that a system of through booking of goods from the mainland to Eyre Peninsula might be instituted. A report on the suggestion was received from the General Traffic Manager. The Board decided that this should be published in the *Journal*. The report reads:—

"I have carefully considered Cabinet Minute of 25/10/20, and after full investigations on the mainland and the Peninsula, have come to the conclusion that to establish a satisfactory working arrangement for

the through booking of goods between these two points is practically impossible.

"Goods intended for shipment to the West Coast must be delivered at the Adelaide Steamship Company's wharf, Port Adelaide, Port Pirie, or Wallaroo, in time for the steamer to get prompt despatch, and any goods tendered after the advertised hour for receiving may not be accepted for shipment, in which case the goods are held over for the next sailing.

"Kirton Point jetty cargo has, in the past, been carried by the *Wandana*, leaving Port Adelaide on Tuesdays, but owing to delay as the result of rough weather, labor troubles, and other causes, the vessel has on several occasions had to over-carry part of the cargo in order to keep the mail time table. At present, the Kirton Point cargo is taken by the s.s. *Paringa* and landed at Port Lincoln on Wednesdays.

"Cargo is delivered at both jetties at Port Lincoln. Goods to be carried by rail are discharged at Kirton Point, and local goods at the old jetty. I believe the average tonnage of goods per week landed at Kirton Point is 140, the major portion being timber, cornsacks, super, and kerosine. Super and cornsacks are dealt with by the agents, who generally store same at Port Lincoln, and subsequently distribute in small quantities to farmers.

"Farming implements are forwarded from various stations on the mainland to the West Coast. Agricultural machines are sometimes sent from Appamurra, where we have no resident staff, and charges on these would necessarily have to be raised by the railway staff—probably a guard. Therefore, to expect them to fix rail charges to Port Adelaide on all classes of merchandise, various handling charges, wharfage for the Harbors Board at both ports, local shunting at Port Lincoln, and last of all, determine the steamer charges, which are based on measurement, also collect all charges before accepting the consignment, is, in my opinion, doomed to failure.

"At Port Lincoln it would be necessary to appoint an additional clerk, and also provide increased office and storage accommodation.

"I call special attention to the notes of interview between representatives of the Harbors Board, the Adelaide Steamship Company, and myself, and desire to point out that while there is not any difficulty in the arrangement proposed by the Harbors Board, the Adelaide Steamship Company requires payment of freight on delivery of goods ex ship's slings, and the company is not willing to give up its lien on the goods without payment of freight and charges, which is now paid by Port Lincoln forwarding agents, who accept the responsibility of collection from consignees. With a through system of booking, this work, and the risk of collection from the consignees, would have to be taken by the railways, as the person responsible for delivery at destination station.

"We have 59 stations and sidings on Eyre Peninsula, five of which have a resident staff, viz., Port Lincoln, Cummins, Yeelanna, Minnipa, and Thevenard, and in order to secure all freight, shipping charges, etc., *charges would have to be prepaid. This would cause more delays than at present*, and I feel certain that if credit were allowed on goods

forwarded, and railways were responsible for the shipping company's charges, the present heavy loss on working the West Coast lines would be largely increased.

"The rates charged by the agents at Port Lincoln are as follows:—

1. Government departments, 1s. per ton, with 1s. minimum.
2. Storekeepers, hotelkeepers, and tradesmen, 1s. per ton, with 1s. 6d. minimum.
3. Minimum charge for casuals, 2s., and rate for—
  - (a) General goods, 1s. per ton or 5 per cent. on charges paid, whichever be greater.
  - (b) Super, 6d. per ton or 5 per cent. on charges paid, whichever be the greater.
  - (c) Machinery, 5 per cent. on charges paid.

"To secure business the agents have necessarily to allow credit, and I am informed that one firm has over £1,000 outstanding in its forwarding branch, which they hope to collect after the harvest. Some of this money has been on the books for two years.

"Summarised, the position is as follows:—

1. The Adelaide Steamship Company cannot accept any responsibility, nor collect any railway freights on cargo sent beyond Port Lincoln.
2. Our staff would not be in a position to correctly determine the shipping charges, and therefore could not collect the amounts due to the company.
3. Unless freight charges be prepaid, railways will lose money, as they would have to pay the shipping company and the Harbors Board.
4. Increased expenditure would be involved in providing extra accommodation and additional staff.

"I believe that settlers have an idea it would be cheaper to have a 'through' rate, but this is not so, as I am not prepared to recommend the Commissioner to agree to undertake the work for double the amount now charged by the agents. No doubt the prepayment of freight for all goods would not be convenient for settlers, and instead of accelerating the delivery, it would take much longer than at present.

"The representatives of the Harbors Board and the Adelaide Steamship Company agree with my report, and in view of the circumstances, I respectfully urge that the Government be asked to reconsider this question with a view to continuing the present arrangements."

*Prickly Pear as a Noxious Weed.*—The Port Elliott District Council asked that the Board might endeavor to have prickly pear proclaimed a noxious weed. The Secretary was instructed to advise the council that the Board considered it useless to add to the list of noxious weeds whilst existing legislation remained.

*Information regarding Noxious Weeds.*—The Local Government Department sought information relating to the seedling habits of plants that were proclaimed under the Noxious Weeds Act. The Secretary was instructed to obtain from the Branches of the Bureau information that would be of value to the Local Government Department.



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*Resolution from Conference of River Murray Branches.*—(a) "That the Government be asked to take steps to facilitate the making of drain pipes at Berri and Cobdogla." It was decided to ask the Director of Irrigation to furnish a report on the subject. (b) "That in view of the greatly extended areas now being devoted to trees and vines on the Murray River, this Conference requests that the Advisory Board urge the Government to take all possible steps to secure for the dried fruit industry a stable export trade, and in view of the fact that the chief competition in the world's markets comes from countries with a low-wage standard, the Government be asked to strongly represent to the Commonwealth authorities the desirability of a substantial preference on colonial fruits in the United Kingdom, Canada, and New Zealand." It was decided to transmit the resolution to the Minister with the full support of the Board. (c) "That the Government be asked to subsidize the A.D.F.A. publicity campaign." The Board could not see its way clear to recommend this action. (d) "That the several Branches of the Bureau on the River be asked to induce their members to make a trial of cotton growing, with a view of instituting the same as a side line." The Board decided to recommend River Branches to test the possibilities of cultivating cotton. (e) "This Conference is of the opinion that if there was a short course of instruction at the Berri Experimental Orchard for horticulturists, more growers would take the opportunity of attending same who cannot attend the Roseworthy Agricultural College." The Secretary was instructed to ask the Horticultural Instructor for a report on the matter. (f) "That it be a recommendation from this Conference that the Government appoint a traveling viticultural expert for the Murray Valley." The Secretary was instructed to inform the Branches in the Murray River areas that the State Viticulturist was stationed at the Roseworthy Agricultural College, and that his services were available to Branches on application to the Department of Agriculture. (g) "That the Government be asked to experiment with the evaporation of fruit." It was decided to ask the Horticultural Instructor to supply a report on this matter. (h) "That spraying of all apple, pear, and quince trees and vines be made compulsory, and that a salaried officer be appointed to supervise the work, and that legislation be introduced to allow of the formation of local boards to control the operations." It was decided to ask the Horticultural Instructor for a report on this matter. (i) "That the Government should make inquiries with the object of evolving some scheme that will preserve timber now being destroyed in the course of clearing land for planting." "That the Government should take steps to inquire into and protect the natural regeneration of timber on suitable places in the bends of the River Murray, and that the sub-committee of the Advisory Board should be instructed to undertake an investigation with that object in view." "That a delegation, consisting of one member of each of the River Murray Branches, should wait on the Government with the above-mentioned resolutions." The Board directed the Secretary to take the necessary action.

*Discussion of Wheat Pooling Scheme at Branch Meetings.*—Communications were received from the Paskeville, Keith, and Willowie

Branches having reference to matters relating to the Wheat Scheme. The Paskeville Branch asked whether discussion on the wheat pooling system should be debarred at Bureau meetings. The Board considered that the matter was now one of Government policy, and that it was undesirable for Branches to discuss the matter.

*Testing Life of Timber for Fencing Posts.*—The Minnipa Branch asked that experiments might be conducted at the Minnipa Experimental Farm to ascertain the life of different timber grown on Eyre Peninsula for fencing posts. It was decided to submit the matter to the Director of Agriculture (Professor Arthur J. Perkins) for a report.

*Appointment of Mr. H. J. Finnis as Secretary.*—The Chairman (Mr. C. J. Tuckwell) on behalf of the members of the Board congratulated Mr. Finnis on having been appointed to the position of Secretary of the Advisory Board.

*Welcome to Mr. Jeffrey.*—The Chairman also extended a welcome to Mr. George Jeffrey, who had now practically recovered from a serious accident, and attended a board meeting for the first time for some months.

*Congress, 1921.*—The Chairman (Mr. C. J. Tuckwell), the Director of Agriculture (Professor Arthur J. Perkins), the Principal of the Roseworthy Agricultural College (Mr. W. J. Colebatch), and the Secretary of the Advisory Board (Mr. H. J. Finnis) were appointed to act as a committee for the 1921 Congress.

*Life Member.*—The name of Mr. W. Nicolle, of the Meadows Branch, was added to the list of life members of the Agricultural Bureau.

*New Members.*—The following names were added to the rolls of existing Branches:—Yacka—A. Martin; Waikerie—W. J. Cullen, F. W. Coats, A. D. Terrell; Black Springs—C. Dunn, O. Mann; Clarendon—A. L. Spencer; Wudinna—Len. Knight; Ironbank—H. Tucker, S. H. Baxendale; Claypan Bore—P. T. Duffield, H. G. Heyn, E. Heinike; Keith—A. M. Densley, J. E. Godlee, H. C. Nagel, E. M. Stokes, H. V. Gregory; Mount Gambier—M. Robinson; Berri—E. Edwardsen; Roberts and Verran—B. Evans; Murray Bridge—T. Dunstan; Williamstown—H. G. Koch, W. Fromm; Laura—J. Drew, H. Phillips, P. Paech, B. Jaensch; Borrioka—T. Quintrell; Lone Gum—F. J. Cocks, L. D. Massey, C. C. Warnecke, Campbell, H. Marsh, R. Pash, R. Nelson; Virginia—C. Day, F. Hatcher, E. King, H. P. Day; Yeelanna—W. Woodward, L. B. Smith, M. Cronin; Koppio—R. Miller, A. Cowie; Butler—A. G. Campbell, R. S. Campbell; Yadarrie—P. S. Crabb; Kybybolite—I. Gibbs, J. C. Gibbs, A. J. Gibbs; Rockwood—M. J. Myers, H. C. Hodson, T. McGuinness, H. Green, J. J. Bradford, H. C. Dunn, J. T. Steed, A. Carter, S. Weary, A. E. Henley, B. Henley, P. Henley, C. Heath, F. Ness, F. A. Powell, B. H. Powell, R. D. Bawhey, H. Galpin, E. Galpin, J. Jolley, W. Edwards, A. Cameron, H. Diener; Black Springs—H. Gilbert, H. J. Rettilick, A. Mickel, J. Howard, C. Hewers; Ashbourne—G. Liesegang; Rosy Pine—F. Koeppen, Falkenberg; Wirrabara—R. Scott; Maitland—A. J. Moulds; Kingston-on-Murray—J. H. Snow, S. H. Baxendale; Green Patch—E. Seager, J. E. Forbes; Pinnaroo—R. Pritchard.

## EGG-LAYING COMPETITION, 1921-1922.

HELD AT THE PARAFIELD POULTRY STATION, PARAFIELD, UNDER THE DIRECTION  
OF D. F. LAURIE (GOVERNMENT POULTRY EXPERT AND LECTURER).

Total No. of Pens.—Section I, Light Breeds (Single Testing), 24—3 pullets in each entry. Section II, Heavy Breeds (Single Testing), 13—3 pullets in each entry. Section III, Light Breeds, 25—6 pullets in each pen. Section IV, Heavy Breeds, 9—6 pullets in each pen.

TWELVE MONTHS' TEST. TO START ON MARCH 1st, 1921, AND TO TERMINATE ON FEBRUARY 28th, 1922.

## SECTION 1.—LIGHT BREEDS (SINGLE TESTING). THREE PULLETS IN EACH ENTRY.

Row No.	Name and Address.	Bird No.	Month ending 30/6/21.	Score to Date.	Bird No.	Month ending 30/6/21.	Score to Date.	Bird No.	Month ending 30/6/21.	Score to Date.
WHITE LECHORNS.										
E	Bamford, W. H., 74, Adelaide Road, Glenelg	1	20	62	2	20	58	3	10	48
E	Connor, D. C., Gawler .....	4	8	39	5	3	34	6	21	58
E	Willington, Mrs. G., Milang ....	7	11	67	8	4	21	9	18	45
E	Nancarrow, J. T., Plympton ....	10	—	10	11	5	14	12	10	46
E	Broadview Poultry Farm, Seaton Park	13	14	35	14	10	34	15	8	31
E	Stevens, H. J., Broken Hill .....	16	—	13	17	12	26	18	17	45
E	Monkhouse, A. J., Woodside .....	19	7	22	20	14	30	21	16	54
E	Turvey, D. J., Milang .....	22	—	1	23	—	—	24	—	—
E	Lampert, Mrs. S., Piccadilly ....	25	15	26	26	15	15	27	—	—
E	Nancarrow, J. T., Plympton ....	28	7	25	29	13	32	30	—	30
E	Small, E. W., Mount Gambier ....	31	7	19	32	3	30	33	9	20
E	Coleman, A. C., Grange .....	34	2	19	35	—	—	36	15	34
E	Broadview Poultry Farm, Seaton Park	37	11	41	38	2	35	39	3	35
E	Holmes, F. A., Naracoorte .....	40	8	17	41	12	19	42	18	18
E	Lampert, Mrs. S., Piccadilly ....	43	20	56	44	—	7	45	—	15
E	Green, F. W. H., Monteith .....	46	6	13	47	12	37	48	7	20
E	Howie, H. H., Mount Gambier ..	49	14	34	50	6	31	51	5	31
E	Willmott, H. J., Clarence Park ..	52	4	14	53	1	1	54	3	4
E	Stockman, A., Goodwood .....	55	5	44	56	—	1	57	—	8
E	Green, A. J., Crystal Brook .....	58	6	36	59	8	34	60	11	41
E	Herbert, C., Alberton .....	61	7	13	62	11	29	63	12	30
E	Blake, Mrs. B. L., Berowra, N.S.W.	64	14	48	65	13	48	66	12	43
F	Tilly, P. N., Balwyn, Victoria ...	1	13	42	2	10	45	3	4	29
F	Dugan, T., Wingfield Rifle Range, Port Adelaide	4	18	62	5	21	54	6	19	61
	Totals .....	—	217	758	—	195	635	—	216	746

## SECTION 2.—HEAVY BREED (SINGLE TESTING). THREE PULLETS EACH ENTRY.

## BLACK ORPINGTONS.

F	Lampert, Mrs. S., Piccadilly ....	7	19	47	8	19	44	9	22	71
F	Shaw, R. R., Crystal Brook .....	10	3	4	11	11	11	12	17	32
F	Farr, K. H., Fullarton Estate .....	13	22	66	14	20	67	15	7	39
F	Alford, T., Broken Hill .....	16	25	93	17	21	65	18	15	89
F	Lampert, Mrs. S., Piccadilly ....	19	23	49	20	16	73	21	—	—
F	Holmes, F. A., Naracoorte .....	22	9	9	23	16	29	24	14	21
F	Shaw, R. R., Crystal Brook .....	25	7	8	26	11	11	27	—	—
F	Wheaton, S. P., Bute .....	28	2	24	29	—	13	30	—	7
F	Bansemmer, Mrs. B., Beaumont ...	31	17	61	32	23	78	33	11	46
F	Farr, K. H., Fullarton Estate .....	34	24	76	35	25	73	36	23	84
F	Mortimer, G., Broken Hill .....	37	22	68	38	27	74	39	24	54



## SECTION 2.—HEAVY BREEDS (SINGLE TESTING). THREE PULLETS IN EACH ENTRY.

Name and Address.	RHODE ISLAND REDS.								
	Bird No.	Month ending 30/6/21.	Score to Date.	Bird No.	Month ending 30/6/21.	Score to Date.	Bird No.	Month ending 30/6/21.	Score to Date.
Stockman, A., Goodwood .....	40	21	52	41	10	29	42	11	14
Tester, G., Naracoorte .....	43	20	34	44	—	—	45	—	—
Totals .....	—	214	591	—	190	567	—	144	457

## SECTION 3.—LIGHT BREEDS (PEN TESTS). SIX PULLETS IN EACH PEN.

Pen No.	Name and Address.	Breed.	Eggs Laid for Month Ending 30/6/21.	Total Eggs Laid from 1/3/21 to 30/6/21.
1	Anderson, S., Gawler Railway .....	White Leghorns .....	64	290
2	Pugaley, A., Hindmarsh .....	" .....	5	184†
3	Connor, D. C., Gawler .....	" .....	47	187
4	Willington, Mrs. G., Milang .....	" .....	17	160
5	Norton Bros., Seaton Park .....	" .....	40	178
6	Nancarrow, J. T., Plympton .....	" .....	6	105
7	Small, E. W., Mount Gambier .....	" .....	49	197
8	Buchan, J. S., Seaton Park .....	" .....	80	247
9	Anderson, J., Prospect .....	" .....	3	106
10	Pugaley, A., Hindmarsh .....	" .....	30	166
11	Alford, T., Broken Hill .....	" .....	52	191
12	Pool, F. J., North Norwood .....	" .....	9	132
13	Nancarrow, J. T., Plympton .....	" .....	37	226
14	Smith & Gwynne, Gawler South .....	" .....	22	193
15	Ratten, C. A., Mile End .....	" .....	49	231
16	Howie, H. H., Mount Gambier .....	" .....	52	290
17	Willmott, H. J., Clarence Park .....	" .....	29	122
18	Anderson, Wm., Kapunda .....	" .....	12	274
19	Herbert, C., Alberton .....	" .....	52	204
20	Sparrow, F. H. L., Beverley .....	" .....	21	285
21	Clee Hill Stud Poultry Farm, Box Hill, Victoria .....	" .....	41	206
22	Beythein, E. W., Scott's Creek .....	" .....	31	126
23	Provis & Sons, W., Tumby Bay .....	" .....	46	200
24	Dugan, T., Wingfield Rifle Range, Fort Adelaide .....	" .....	29	191
25	Bansemmer, Mrs. B., Beaumont .....	" .....	56	315
Totals .....			879	4,996

## SECTION 4.—HEAVY BREEDS (PEN TEST). SIX PULLETS EACH ENTRY.

26	Lampert, Mrs. S., Piccadilly .....	Black Orpingtons .....	59	238
27	Farr, K. H., Fullarton Estate .....	" .....	49	207
28	Bansemmer, Mrs. B., Beaumont .....	" .....	—	—
29	Farr, K. H., Fullarton Estate .....	" .....	88	280
30	Lampert, Mrs. S., Piccadilly .....	" .....	94	363
31	Alford, T., Broken Hill .....	" .....	114	158
32	Clee Hill Stud Poultry Farm, Box Hill, Victoria .....	" .....	125	393
33	Lampert, Mrs. S., Piccadilly .....	" .....	121	476
34	Ryan, Jas., Coburg, Victoria .....	Rhode Island Reds ..	118	435
Totals .....			768	2,550

† One bird dead.

## DIVISION B.—STANDARD BREEDS ONLY.

19 Pens each of 6 Birds—114 Birds.

COMMENCING APRIL 1ST, 1921. TERMINATES FEBRUARY 28TH, 1922.

Pen No.	Name and Address.	Breed.	Eggs Laid for Month Ending 30/6/21.	Total Eggs Laid from 1/4/21 to 30/6/21.
37	*Lampert, Mrs. S., Piccadilly .....	White Leghorns.....	—	—
38	*Newcombe, E. G., Alberton .....	" .....	—	—
39	Packham, C. D., Kensington Park...	" .....	44	105
40	*Beythien, E. W., Scott's Creek.....	" .....	—	—
42	Packham, C. D., Kensington Park...	" .....	—	—
43	*Newcombe, E. G., Alberton .....	" .....	56	130
44	Belmont Orpington Yards, Evandale.	Black Orpington .....	—	—
45	*Lampert, Mrs. S., Piccadilly .....	" .....	40	152
46	*Farr, K. H., Fullarton Estate.....	" .....	—	—
47	Bansemmer, Mrs. B., Beaumont .....	" .....	—	—
48	Addison, Mrs. A. L., Malvern .....	Rhode Island Red....	151	226
49	*Beer, A. C., Gilberton .....	" .....	75	134
50	Hill, H. V., West Adelaide .....	" .....	—	—
51	*Beer, A. C., Gilberton .....	" .....	75	123
52	Perkins, C. W., North Norwood .....	Silver Wyandotte ....	—	—
53	Addison, A. L., Malvern .....	White Wyandotte ....	126	188
54	Bagshaw, W. E., Hermitage .....	White Rocks .....	42	80
55	Bagshaw, W. E., Hermitage .....	Barred Rocks.....	80	188
	Totals .....		718	1,401

\* Not in accordance with standard.

## BLUESTONE AND SMUT.

The Elbow Hill Branch of the Agricultural Bureau recently sought a reply to the following question:—"Does bluestone render wheat immune from smut, or does it merely kill the smut spores?" The Director of Agriculture (Professor Arthur J. Perkins) supplied the following reply:—"The main effect of bluestone is to destroy spores of smut adhering to the grain, but, over and above this action, it affords a certain degree of protection against future infection. The position is that, so long as the grain is coated with a film of bluestone, it will tend to destroy spores germinating in contact with the grain. On the other hand, bluestone is more or less soluble in water, and will tend to be absorbed by the soil moisture; hence, it is not an absolute protection against reinfection from the soil. Greater protection is secured if the moist pickled grain is sprinkled over with finely powdered slaked lime, or washed with the milk of lime. Unfortunately, this process renders the grain difficult to handle in seeding operations, and is not generally adopted. The safest bluestone strength to be used is a 1 per cent. solution; that is to say, 1lb. bluestone in 10galls. of water. As much as 1½lbs. is occasionally recommended, and may be used without any great danger."

## DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Limited, reported on July 1st, 1921:—

**BUTTER.**—The splendid weather which the dairying districts in this State have been experiencing for some weeks has had the effect of increasing consignments of both cream and butter, and supplies increased so considerably that it was not necessary to import any butter from the other States, and at the close of the month there was a surplus for export. Values throughout the month maintained fairly well, and at the end prices were as follows:—Best factory and creamery fresh butter in prints sold at 1s. 5½d. to 1s. 6d.; second grades, 1s. 3d.; best separators and dairies, 1s. 3d. to 1s. 4½d.; fair quality, 1s. 2d. to 1s. 2½d.; store and collectors', 1s. 1d. to 1s. 2d.

**EGGS.**—The quantities coming forward have substantially increased, values at the close of the month being:—Fresh hen, 1s. 8d.; duck, 1s. 9d. Refrigerated lots and pickled sorts are offering at very low figures, but no business is resulting.

**CHEESE.**—Locally made cheese has been very scarce, and importations from Queensland have come along to fill the gap. However, quantities coming forward now from local factories are quite equal to trade requirements, the range in price being from 1s. 2d. to 1s. 2½d. for new makes, large to loaf.

**HONEY.**—Rates have continued stationary, fair quantities coming forward, but prime samples have had a ready sale at 5d., second grades being neglected at 3½d. Beeswax saleable at 1s. 7d.

**ALMONDS.**—No alteration to report in this line, supplies being readily cleared at:—Brandis, 9½d. to 10d.; mixed softshells, 8½d. to 9d.; hardshells, 3½d.; kernels, 1s. 8d.

**BACON.**—Values during the month of June firmed considerably, but rates of bacon did not improve to the same extent, best factory cured sides selling at 1s. 2½d. to 1s. 3d.; hams up to 1s. 3d. Lard in prints, 8½d.; bulk, 8d.

**LIVE POULTRY.**—It is pleasing to report that demand has been exceptionally brisk, quantities having kept up remarkably well, and buyers have operated keenly throughout, especially on quality lots. Prime roosters, 4s. 3d. to 6s. 3d. each; nice-conditioned cockerels, 3s. 3d. to 4s. 2d. each; plump hens, 3s. 9d. to 5s. 3½d. each; light birds, 3s. to 3s. 8d. each; ducks, 3s. 6d. to 5s. 6d. each; geese, 7s. to 7s. 9d. each; turkeys, 1s. to 1s. 6d. per lb. live weight; fattening sorts lower; pigeons, 7d. each.

**POTATOES.**—Good business has been done with potatoes and onions during the past month, there being little alteration in values. The bulk of the trade has been done with Victorian importations. Values at the end of the month were:—Victorian Snowflake potatoes from £7 to £7 10s.; Carmens, £7 10s. to £8 10s.

**ONIONS.**—£6 to £7 per ton on rails, Mile End.

## **Jelbarts Proprietary, Limited,** **ENGINEERS,**

**Works and Offices—**

**405-413 MAIR STREET, BALLARAT. TELEPHONE 676.**

### **"JELBART" CRUDE OIL TRACTORS** **Lead the World.**

They have never been equalled for Power, Economy, and Long Life. They have six public records to their credit. They give twice the power for the rating of any imported tractor, and, power for power, they are only half the cost of imported machines. There is nothing capable of competing with them on kerosene for cheapness of running or for ease of manipulation, and on crude oil they add to this advantage by reducing by more than half their running costs on kerosene.

Our SUCTION GAS PLANTS, using wood fuel, are marvels of economy. All sizes obtainable from 8 h.p. to 100 h.p.

**USERS OF POWER SHOULD WRITE FOR PARTICULARS.**

## **BINDER TWINE.**

**Smooth Running and Free from Knots.**

I am specialising in Binder Twine, and offer two lines of unsurpassed quality and at lowest price obtainable.

**"SOUTHERN STATE ECONOMIC,"**  
APPROXIMATELY 425FT. TO LB.

**"SOUTHERN STATE PURE MANILA,"**  
APPROXIMATELY 550FT. TO LB.

**TERMS—AFTER HARVEST, AS USUAL.**

SEND POSTCARD FOR PRICES AND SAMPLES TO

**G. G. NICHOLLS,**  
**BOX 792, G.P.O., ADELAIDE,**  
OR TO LOCAL AGENTS.

## THE AGRICULTURAL OUTLOOK.

### REPORTS FOR THE MONTH OF JUNE.

The following reports on the general agricultural condition and outlook of the areas represented by the Government Experimental Farms mentioned below have been prepared by the respective managers:—

*Booborowie.*—Weather—The weather this month was very wet from the 1st instant up to the 19th instant, when extremely fine and frosty weather prevailed up to the time of writing; 2.76 points of rain was registered for the month. With good rains to follow, there is every appearance of a good season. Crops are all germinating well. Natural feed is very plentiful. Stock are all in good condition. Pests—Rabbits are getting rather plentiful in places. Miscellaneous—Seeding is practically finished.

*Eyre Peninsula.*—Weather—Good rains up to the middle of the month, but quite warm, and rain then until the last day. Heavy dews, but no frost up to date. Crops—All that are up are looking splendid, the warm weather from June 17th to June 30th giving them a chance to get away a bit. Seeding not quite finished, but will be this coming week, there being only a little new land to sow with barley. Natural feed is still in abundance, it having made wonderful growth. Stock are all in first-class order and free from disease. Pests—Rabbits commencing to put in an appearance, but are nothing to worry about just yet. Miscellaneous—Pruning is completed, and orchard trees have done well, especially stone fruits.

*Turretfield.*—Weather—The early half of this month was very wet, and the last fortnight cold; severe frost could be seen and felt on consecutive days; this had the effect of forming a hard crust on the land after the rain; 1.45 points of rain fell during the month. Crops—The majority of crops are now sown; many of them are very dirty; the sowing, on the whole, in this district has been later than usual. Natural Feed—There is a fair showing of natural feed. Stock—Horse stock is not looking too well this year, the heavy work and the inferior quality of the hay being against condition in working stock. Pests—A plague of insects similar to the lucerne flea is doing much damage to feed crops and gardens; the place is swarming with them, and they are sucking the life out of all classes of plants.

# POTASH!!!

MURIATE, 50%

SULPHATE, 90%



Prompt Delivery.  
To Arrive.

(Direct from the great mines of Alsace, controlled by the French Government.)

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We are now booking orders for the following goods—delivery as required during the season:—

**WOOLPACKS,**

**BINDER TWINE,**

**CORNSACKS,**

**SEWING TWINE,**

**SHEEP DIP.**

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WE CAN ALSO QUOTE

**WIRE NETTING AND FENCING MATERIAL**

OF EVERY DESCRIPTION.

---

**DALGETY & COMPANY, LIMITED,**

**ADELAIDE AND BRANCHES.**

## RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of and to the end of June, 1921, also the average precipitation to the end of June, and the average annual rainfall.

Station.	For June, 1921.	To end June, 1921.	Average to end June.	Average Annual Rainfall	Station.	For June, 1921.	To end June, 1921.	Average to end June.	Average Annual Rainfall
FAIR NORTH AND UPPER NORTH.					LOWER NORTH—continued.				
Oodnadatta .....	0.20	6.13	2.90	4.73	Spalding .....	3.10	12.48	8.39	20.18
Marree .....	0.90	4.09	3.29	6.02	Gulnare .....	2.45	11.73	7.96	18.97
Farina .....	1.99	5.32	3.71	6.57	Yacka .....	2.30	10.77	6.86	15.27
Copley .....	2.58	7.51	4.66	8.30	Koolunga .....	1.99	11.51	7.11	15.73
Beltana .....	1.38	8.02	4.83	8.93	Snowtown .....	1.39	11.52	7.44	15.37
Blinman .....	1.39	8.61	6.60	12.52	Brinkworth .....	2.12	10.14	7.31	15.91
Tarcoola .....	1.02	12.29	3.44	7.33	Blyth .....	2.98	13.37	7.73	16.55
Hookina .....	1.32	14.91	6.08	12.65	Clare .....	2.55	14.87	10.92	24.47
Hawker .....	1.76	16.72	5.97	12.37	Mintaro .....	2.11	12.04	9.99	23.07
Wilson .....	1.35	16.44	5.82	11.85	Watervale .....	2.40	12.26	9.34	27.48
Gordon .....	1.17	20.23	6.12	10.43	Auburn .....	2.65	13.39	10.82	17.32
Quorn .....	1.13	19.05	6.33	13.79	Hoyleton .....	1.44	9.76	8.12	15.82
Port Augusta .....	1.42	16.10	4.78	9.42	Balaklava .....	2.14	9.82	7.43	13.14
Port Augusta West .....	1.55	15.51	4.44	9.36	Port Wakefield .....	1.72	11.92	6.66	13.54
Bruce .....	0.73	15.90	4.68	9.99	Terowie .....	2.25	12.10	5.94	13.97
Hammond .....	1.19	16.68	5.32	11.36	Yarcowie .....	2.81	12.89	6.27	13.54
Wilmington .....	2.34	22.97	8.20	18.06	Hallett .....	2.47	11.20	6.95	16.28
Willowie .....	1.60	13.45	7.45	11.82	Mount Bryan .....	3.14	12.36	6.82	16.38
Melrose .....	2.32	23.47	10.77	23.11	Burra .....	2.72	12.52	8.05	17.91
Booleroo Centre .....	1.63	13.94	7.00	15.51	Farrell's Flat .....	2.51	12.33	8.39	18.87
Port Germein .....	1.39	14.28	6.07	12.65	WEST OF MURRAY RANGE.				
Wirrabara .....	1.95	17.52	8.72	19.44	Manoora .....	2.04	11.27	8.04	18.54
Appila .....	1.06	11.06	6.14	14.90	Saddleworth .....	2.04	11.34	8.97	19.75
Craddock .....	1.69	17.56	5.24	10.82	Marrabel .....	3.20	13.89	8.64	19.44
Carrieton .....	1.51	16.97	5.71	12.34	Riverton .....	2.07	10.01	9.42	20.77
Johnburg .....	1.76	18.71	4.74	10.22	Tarlee .....	1.74	8.78	8.03	17.8
Eurelia .....	1.81	14.72	6.08	13.11	Stockport .....	2.01	11.15	7.30	16.9
Orroroo .....	1.85	17.59	6.39	13.42	Hamley Bridge .....	1.57	10.44	7.64	16.4
Nackara .....	2.20	16.50	5.38	10.63	Kapunda .....	1.56	10.48	8.97	19.6
Black Rock .....	2.00	16.55	5.95	12.29	Freeling .....	1.47	8.80	8.08	17.5
Uoolta .....	1.33	11.01	5.36	11.65	Greenock .....	1.25	11.06	9.54	21.3
Peterborough .....	1.93	11.75	6.15	13.82	Truro .....	2.01	14.74	8.81	20.8
Yongala .....	1.78	12.09	6.36	14.13	Stockwell .....	1.44	12.23	8.97	21.0
LOWER NORTH-EAST.					Nuriootpa .....	1.58	12.44	9.30	20.69
Yunta .....	0.98	12.43	4.43	8.50	Angaston .....	1.94	12.71	9.95	23.3
Waukaringa .....	1.03	10.40	4.16	8.14	Tanunda .....	2.00	11.18	10.15	25.4
Mannahill .....	0.66	14.36	4.25	8.51	Lyndoch .....	2.02	11.50	10.11	28.1
Cockburn .....	2.17	10.08	4.33	8.03	Williamstown .....	1.82	10.98	12.64	27.4
Broken Hill, N.S.W. ....	3.03	11.78	5.01	9.89	ADELAIDE PLAINS.				
LOWER NORTH.					Mallala .....	2.27	9.97	7.81	26.61
Port Pirie .....	2.25	14.86	6.47	13.26	Roseworthy .....	1.86	8.81	7.98	17.37
Port Broughton .....	1.83	12.72	6.79	14.13	Gawler .....	1.86	9.42	8.59	19.14
Bute .....	1.82	11.95	7.23	15.55	Two Wells .....	1.53	8.03	7.77	15.91
Leura .....	2.12	13.09	8.01	18.12	Virginia .....	1.66	8.45	8.3	17.11
Caltowie .....	2.00	13.59	7.43	17.02	Smithfield .....	1.21	7.73	8.1	17.33
Jamestown .....	1.57	11.98	7.57	17.56	Salisbury .....	1.31	8.08	9.4	18.32
Bundaleer W. Wks. ....	1.80	11.20	7.32	17.56	North Adelaide .....	2.00	12.58	10.7	21.87
Gladstone .....	2.24	12.01	7.02	16.05	Adelaide .....	2.05	10.85	10.4	21.01
Crystal Brook .....	2.87	16.09	7.13	15.62	Glenside .....	1.61	8.46	9.9	18.42
Georgetown .....	2.64	11.64	8.30	18.30	Brighton .....	1.80	11.22	10.4	21.03
Naridy .....	2.07	10.85	7.54	16.43	Mitcham .....	2.82	13.08	11.9	23.68
Redhill .....	2.38	15.01	7.70	16.06	Glen Osmond .....	2.21	11.55	11.1	25.73
					Magill .....	1.51	9.88	12.4	25.38

## RAINFALL—continued.

Station.	For June, 1921.	To end June, 1921.	Av'ge. to end June.	Av'ge. Annual Rainfall
MOUNT LOFFY RANGES.				
Teatree Gully.....	1-81	10-64	13-30	27-73
Stirling West .....	3-25	18-20	21-74	46-82
Uraidla .....	2-84	16-63	20-71	44-49
Clarendon .....	3-05	15-40	15-67	33-18
Morphett Vale .....	1-83	10-88	10-77	22-90
Noarlunga .....	2-38	11-26	9-64	20-21
Willunga .....	2-28	12-31	10-14	25-82
Aldinga .....	1-83	11-34	9-68	20-22
Myponga .....	2-89	15-93	—	—
Normanville .....	1-68	13-17	9-77	20-53
Yankalilla .....	1-98	13-30	11-23	22-93
Mount Pleasant .....	2-96	14-63	12-06	27-01
Birdwood .....	2-60	13-43	13-11	29-43
Gumeracha .....	3-08	14-42	15-18	33-33
Millbrook Rvtr. ....	2-60	13-23	—	—
Tweedvale .....	2-80	14-83	15-93	35-60
Woodside .....	2-57	13-95	14-19	32-05
Ambleside .....	2-70	15-24	15-26	34-81
Nairne .....	2-33	11-99	12-80	28-58
Mount Barker .....	2-61	14-14	13-83	31-10
Echunga .....	2-78	14-03	15-32	32-94
Macodesfield .....	1-98	11-82	13-42	30-60
Meadows .....	3-59	14-44	16-26	36-26
Strathalbyn .....	1-46	8-95	8-77	19-23
MURRAY FLATS AND VALLEY.				
Meningie .....	1-67	7-38	8-65	18-77
Milang .....	1-21	6-60	7-38	15-56
Langhorne's Bdge. ....	0-98	9-17	6-56	14-59
Wallington .....	1-42	9-40	6-86	14-82
Tallem Bend .....	1-16	10-28	6-24	24-55
Murray Bridge .....	1-14	10-17	6-43	13-98
Callington .....	1-40	7-86	7-03	16-45
Mannum .....	1-34	9-95	5-61	11-51
Palmer .....	1-55	10-73	6-40	15-23
Sodan .....	1-55	11-72	5-65	12-07
Swan Reach .....	1-32	11-77	4-81	10-80
Blanchetown .....	0-85	7-57	4-93	10-26
Eudunda .....	2-32	12-12	7-74	17-51
Sutherlands .....	2-09	10-16	5-68	10-90
Morgan .....	2-37	10-74	4-12	9-13
Waikerie .....	0-80	9-34	4-36	9-41
Overland Corner .....	0-76	7-22	5-21	11-11
Loxton .....	0-90	7-47	5-56	12-27
Denmark .....	0-69	8-33	4-93	10-92
WEST OF SPENCER'S GULF.				
Eucalyptus .....	1-41	4-90	5-53	10-03
White Wall .....	1-83	—	4-28	9-24
Fowler's Bay .....	2-89	7-27	6-24	12-11
Penong .....	4-23	11-55	5-99	12-26
Murat Bay .....	0-96	6-82	4-60	10-47
Smoky Bay .....	1-41	7-16	4-76	10-37
Petina .....	1-10	8-28	5-78	12-97
Streaky Bay .....	2-18	8-85	7-39	15-09
Talia .....	2-01	9-06	6-27	15-35
Port Elliot .....	2-71	6-74	7-85	16-37
Cummins .....	2-14	8-06	—	—
WEST OF SPENCER'S GULF—continued.				
Port Lincoln .....	2-27	6-38	9-15	19-83
Tumby .....	2-82	9-60	6-09	14-76
Carrow .....	2-23	10-04	5-72	15-14
Arno Bay .....	2-56	13-45	5-68	13-10
Cleve .....	3-26	14-57	—	11-56
Cowell .....	2-76	7-90	5-61	11-84
Point Lowly .....	1-67	15-01	5-41	—
YORKE PENINSULA.				
Walleroo .....	1-99	12-92	7-12	14-11
Kadina .....	2-10	13-99	7-74	15-93
Moonta .....	2-68	13-71	7-67	15-93
Green's Plains .....	2-31	11-77	7-33	15-75
Maitland .....	2-01	12-81	9-58	20-20
Androssan .....	1-73	11-69	6-69	13-96
Port Victoria .....	2-33	10-88	7-49	15-34
Curramulka .....	2-27	9-34	8-34	18-31
Minlaton .....	2-31	11-63	8-34	17-70
Brentwood .....	1-51	11-26	7-06	15-44
Stansbury .....	1-37	10-34	7-64	17-08
Warooka .....	1-67	10-86	8-10	17-74
Yorketown .....	1-45	9-83	7-96	17-29
Edithburgh .....	1-42	9-24	7-88	16-58
SOUTH AND SOUTH-EAST.				
Cape Borda .....	5-00	11-42	12-02	24-96
Kingscote .....	2-71	8-93	8-83	18-92
Penneshaw .....	1-64	9-19	8-34	21-39
Victor Harbor .....	1-80	8-85	10-01	21-56
Port Elliot .....	1-95	9-48	9-36	20-00
Goolwa .....	1-44	10-97	8-45	17-87
Karoonda .....	1-81	11-66	—	—
Mindarie .....	0-64	6-28	—	—
Meribah .....	0-99	6-88	—	—
Pinnaroo .....	1-45	13-66	6-62	15-57
Parilla .....	1-28	8-99	6-01	14-02
Lameroo .....	1-40	9-30	6-98	16-45
Parrakie .....	1-32	8-59	5-93	14-42
Geranium .....	1-56	8-86	6-69	16-24
Peake .....	1-57	9-16	6-82	16-25
Cooke's Plains .....	1-49	9-50	6-65	15-00
Coomandook .....	1-33	11-15	7-53	17-75
Coonalpyn .....	1-29	6-80	7-72	17-64
Tintinara .....	1-62	7-24	8-12	18-83
Keith .....	1-62	7-93	7-85	18-64
Bordertown .....	1-83	7-02	8-60	19-62
Wolseley .....	1-98	7-53	7-92	18-07
Frances .....	1-75	6-81	8-32	20-10
Naracoorte .....	2-64	9-53	9-95	22-63
Penola .....	1-69	6-93	11-68	26-48
Lucindale .....	2-32	8-60	10-15	22-93
Kingston .....	3-03	8-78	8-73	24-61
Robe .....	3-77	8-48	11-39	24-60
Beachport .....	4-29	9-13	12-97	27-29
Millicent .....	3-32	9-04	13-81	29-29
Kalangadoo .....	2-99	9-78	—	—
Mount Gambier .....	2-30	7-89	14-03	31-65



## AGRICULTURAL BUREAU REPORTS.

## INDEX TO CURRENT ISSUE AND DATES OF MEETINGS.

Branch.	Report on Page	Dates of Meetings.		Branch.	Report on Page	Dates of Meetings.	
		July.	Aug.			July.	Aug.
Alawoona .....	†	—	—	Frances .....	*	30	27
Aldinga .....	1055	16	13	Freeling .....	*	—	—
Amyton .....	*	—	—	Gawler River .....	*	18	22
Angaston .....	*	—	—	Georgetown .....	*	16	20
Appila-Yarrowie .....	*	—	—	Geranium .....	*	30	27
Arthurton .....	†	—	—	Gladstone .....	*	16	13
Ashbourne .....	1057	—	—	Glencoe .....	*	—	—
Balaklava .....	*	9	13	Glossop .....	1064	—	—
Barmera .....	1054	16	19	Goode .....	*	20	17
Beetaloo Valley .....	1030	20	17	Green Patch .....	1041	18	—
Belalie North .....	*	16	13	Gumeracha .....	1063	18	22
Berri .....	1054	20	17	Halidon .....	*	—	—
Big Swamp .....	*	—	—	Hartley .....	1058	20	—
Blackheath .....	*	16	13	Hawker .....	1030	19	16
Black Springs .....	1037	—	—	Hilltown .....	*	—	—
Blackwood .....	1057	18	15	Hookina .....	†	14	18
Blyth .....	*	23	20	Inman Valley .....	*	—	—
Boolaroo Centre .....	1031	15	—	Ironbank .....	1063	16	13
Borrika .....	1044	—	—	Julia .....	*	—	—
Bowhill .....	*	—	—	Kadina .....	*	—	—
Brentwood .....	1037-8	14	18	Kalangadoo .....	1068	9	13
Brinkley .....	1045	16	13	Kanmantoo .....	*	16	13
Bundaleer Springs ..	*	—	—	Keith .....	†	—	—
Burra .....	*	—	—	Ki Ki .....	*	—	—
Bute .....	*	19	16	Kilkerran .....	†	14	18
Butler .....	1038	—	—	Kimba .....	*	—	—
Cadell .....	*	—	—	Kingscote .....	*	—	—
Caltowie .....	*	—	—	Kingston-on-Murray.	*	—	—
Canowie Belt .....	*	—	—	Kongorong .....	*	14	18
Carrow .....	*	20	18	Koonibba .....	*	14	18
Cherry Gardens .....	1062	19	16	Koppio .....	1044	18	15
Clanfield .....	*	—	—	Kybybolite .....	1064	14	18
Clare .....	1032	5	—	Lake Wangary .....	1041	21	13
Clarendon .....	*	18	15	Lameroo .....	1055	—	—
Claypan Bore .....	*	20	17	Laura .....	*	22	19
Cleve .....	1044	20	17	Leighton .....	*	—	—
Collie .....	*	—	—	Lenswood and Forest	*	23	27
Colton .....	*	—	—	Range .....	—	—	—
Coomandook .....	*	29	26	Lone Gum .....	1047-55	20	17
Coonalpyne .....	1045	15	12	Lone Pine .....	1037	—	—
Coonawarra .....	*	—	—	Longwood .....	1058	16	—
Coorabie .....	*	—	—	Loxton .....	*	—	—
Craddock .....	*	—	—	Lucindale .....	*	—	—
Crystal Brook .....	*	16	13	Lyndoch .....	1037	14	18
Cummins .....	*	23	20	MacGillivray .....	1063	20	17
Cygnat River .....	†	14	18	McLachlan .....	1042-4	2	6
Dawson .....	*	—	—	Maitland .....	*	2	6
Denial Bay .....	*	—	—	Mallala .....	1037	19	—
Dowlingville .....	*	—	—	Mangalo .....	*	—	—
Edillilie .....	1039	30	27	Meadows .....	1059	20	17
Elbow Hill .....	*	23	20	Meningie .....	†	—	—
Eurelia .....	†	—	—	Meribah .....	*	20	17

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Branch	Report on Page	Dates of Meetings.		Branch	Report on Page	Dates of Meetings.	
		July.	Aug.			July.	Aug.
Milang .....	•	9	—	Benmark .....	1052	15	12
Millicent .....	•	2	6	Riverton .....	•	—	—
Miltalie .....	†	16	13	Riverton (Women's) ..	•	—	—
Mindarie .....	•	4	1	Roberts and Verran ..	†	18	15
Minlaton .....	•	15	19	Rockwood .....	1061	18	15
Minnipa .....	†	—	—	Rosedale .....	1037	—	—
Mintaro .....	1030	16	13	Rosy Pine .....	1064	20	—
Monarto South .....	1047	—	—	Saddleworth .....	1033	—	—
Moonta .....	1038	16	19	Saddleworth (Women's)	1034	—	—
Moorak .....	†	14	18	Salisbury .....	1037	6	2
Moorlands .....	•	—	—	Salt Creek .....	•	—	—
Moorook .....	1055	—	—	Sandalwood .....	•	—	—
Morchar .....	1025	16	13	Sherlock .....	•	—	—
Morgan .....	•	—	—	Shoal Bay .....	1062-3	—	—
Morphett Vale .....	•	21	18	Smoky Bay .....	1042-4	16	13
Mount Barker .....	•	9	17	Spalding .....	•	—	—
Mount Bryan .....	•	—	—	Stockport .....	•	—	—
Mount Byron East ..	1031	—	—	Stratbalbyn .....	†	19	16
Mount Compass .....	•	—	—	Talia .....	•	11	8
Mount Gambier .....	1064-6	9	13	Tantanoola .....	•	16	—
Mount Hope .....	1059-60	16	13	Taplan .....	•	23	20
Mount Pleasant .....	†	—	—	Tarcowie .....	1029	19	16
Mount Remarkable ..	•	—	—	Tatiara .....	•	16	20
Mundalla .....	†	20	17	Two Wells .....	1054-7	—	—
Mundoora .....	•	18	22	Uraidla & Summertown	•	4	1
Murray Bridge .....	†	—	—	Veitch .....	•	—	—
Myponga .....	•	20	17	Virginia .....	1036	13	—
Myponga .....	•	—	—	Waikerie .....	•	—	—
Nantawarra .....	1037	21	18	Wall .....	•	—	—
Naracoorte .....	•	9	—	Wanbi .....	•	—	—
Narriby .....	1031	16	20	Warcoowie .....	•	—	—
Narrung .....	•	23	20	Watervale .....	•	—	—
Neeta .....	•	—	—	Wepowie .....	•	16	13
Netherton .....	•	—	—	Whyte-Yarcoowie .....	•	—	—
North Booborowie ..	•	—	—	Wilkawatt .....	†	16	13
North Bundaleer ..	†	—	—	Williamstown .....	1037	6	13
Northfield .....	•	13	10	(Women's)	•	—	—
Nunkeri and Yurgo ..	•	3	7	Williamstown .....	†	—	12
O'Loughlin .....	•	20	17	Willowie .....	•	20	17
Orroroo .....	1029	—	—	Wilmington .....	†	20	17
Parilla .....	•	—	—	Wirrabara .....	1030	—	—
Parilla Well .....	1047	18	15	Wirrega .....	•	—	—
Parrakie .....	•	—	—	Wolowa .....	•	—	—
Paruna .....	•	—	—	Woodside .....	•	16	13
Paskeville .....	1038	19	16	Wudinna .....	1044	—	—
Penola .....	†	2	6	Wynarka .....	•	—	—
Penong .....	•	23	20	Yabmana .....	•	—	—
Petina .....	1044	30	27	Yacka .....	1031	19	16
Pine Forest .....	•	19	16	Yadnarie .....	1043	20	17
Pinnaroo .....	1055	22	19	Yallunda .....	•	—	—
Pompoota .....	1048	—	—	Yaninee .....	•	—	—
Port Broughton .....	•	16	19	Yeelanna .....	1043	16	13
Port Elliot .....	1061	16	20	Yongala Vale .....	•	15	19
Port Germein .....	•	16	13	Yorketown .....	•	—	—
Port Pirie .....	†	—	—	Younghusband .....	•	21	18
Ramco .....	•	18	15				
Redhill .....	1031	26	—				

\* No report received during the month of June.

† Formal report only received.

‡ Held over until next month.

§ Annual meeting.

## THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch.

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

### REPORTS OF BUREAU MEETINGS.

#### UPPER-NORTH DISTRICT.

(PETERBOROUGH AND NORTHWARD.)

MORCHARD (Average annual rainfall, 13.50in.).

April 16th.—Present: 11 members and visitors.

**PREVENTING GUTTERS FORMING INTO CREEKS IN FALLOW PADDOCKS.**—In a short paper dealing with this subject, Mr. R. E. Kitto said the heavy summer rains in many cases washed gutters through much of the fallowed land. Every farmer knew the inconvenience that a gutter running through the centre of the paddock caused, and usually tried some way of filling it in. It often happened that the plough was driven over the fallow, which enlarged the gutters the next time heavy rains were received. Sometimes they would gradually fill in with the team continually crossing over them, but when they were a foot or more in depth that could not be done. His method of treating such gutters was to fill them with old straw. The straw allowed the water to pass over, and collected sand and earth, which gradually sifted up the gutter. After the paddock had been under crop, the straw should be raked along the edge of the gutter, from where it could easily be pitchforked into the gutter. A lengthy and interesting discussion followed.

MORCHARD (Average annual rainfall, 13.50in.).

June 21st.—Present: 16 members and four visitors.

**WATER SUPPLY ON THE FARM.**—In the course of a paper dealing with this subject, Mr. B. McCallum said, in providing a water supply for the farm, he preferred a water main or a well or bore, because the water could be elevated and laid on to the homestead. The pigsties, hay and cow yards, and other out-buildings should also be supplied with water. Pigs appreciated a supply of clean water in their sties during the summer months, and water laid on to the hay yard was very handy for "damping down" the hay for cutting. Water in the cow yard could be utilised for washing down the bails and keeping down the dust. If a supply of water was laid on to the small paddocks adjoining the homestead they could be used for paddocking young stock or a flock of rams. He did not favor having a trough in the stable yard. The horses often left the stalls with a mouthful of fodder, and when taking a drink dropped the feed into the water. If the hay or chaff was not immediately removed, there was a danger of it tainting the water. Dust and manure were also very liable to get into the trough. He favored watering the horses at a convenient distance from the stables. Failing the provision of a well, bore, or main, a good dam would prove very serviceable, and where good holding soil was obtainable in districts of fair average rainfall, he thought the farmer need seldom be without water. If at all possible, arrangements should be made for a supply of water in each paddock.

**CARE OF THE BREEDING EWE.**—Mr. J. Scriven read a paper dealing with this subject. The speaker was of the opinion that the average farmer did not pay sufficient attention to the ewes during the breeding season. Speaking for their district, he thought the rams should be placed with the ewes during November and taken out in February. It was a mistake to leave the rams with the ewes during the lambing period. The ewes should be kept in good order, and a sharp lookout kept for any sheep struck with blowflies. If that happened, the affected animals should be treated at once, with a solution of sheep dip and bluestone. It was a good plan to yard the ewes during February or March, and have them crutched. That made them more clean and comfortable, and greatly minimised the blowfly trouble. Care should be taken to reserve a paddock for the lambing ewes. One with a good supply of water laid on to it would prove most suitable. By making a tour of inspection of the ewes during lambing, the farmer would be able to give assistance to any sheep that were in difficulty. He was not in favor of breeding two lambs from the ewe. The summer lamb was usually a failure, and, as a rule, the mother lost a lot of condition. Interesting discussions followed the reading of both papers.

#### ORROROO (Average annual rainfall, 13.42in.).

May 21st.—Present: eight members.

**POULTRY ON THE FARM.**—Mr. J. C. Hagger contributed a paper on this subject, which was read by the President (Mr. A. L. Brice). The writer of the paper considered a weather-proof shed facing the north was essential where fowls were kept. The house should be surrounded by a 6ft. wire-netting yard, with a gateway large enough to admit a barrow. The perches should be made of 2in. x 1½in. planed jarrah, and fitted with tick-proof cups. The nest boxes should be cleaned out regularly. With such a yard the farmer could have his birds under control during the night time. All surplus cockerels should be marketed or killed off, and not allowed to run with the hens, because fertile eggs deteriorated quickly. For the morning meal he suggested equal quantities of chopped green feed, bran, and pollard mixed with scalded meat meal and a little salt. Wood ashes should be placed under the perches, and plenty of scratching litter provided. The drinking water should be placed in the shade. A good plan, he thought, was to shade the vessel with a small box, from which the top and one side had been removed. Shell grit and a dust bath should also be provided. He advised breeding from vigorous second season cockerels and second year hens. Incubation should be so regulated that the chicks were hatched not later than September. A good discussion followed the reading of the paper. Mr. Graham recommended hanging the perches from the roof as a preventive measure against tick.

#### TARCOWIE (Average annual rainfall, about 15½in.).

May 17th.—Present: 12 members and visitors.

**MAKING FARM LIFE ATTRACTIVE.**—A paper on this subject was read by Mr. J. P. Smith. The writer contended that when a child was old enough to take care of money, a savings bank account should be opened in its favor, and on every birthday a sum should be added in order to teach it to save money. In addition to that, each boy and girl should be given a working interest in the farm. He thought it would be a good plan to give a boy a foal, and when the horse was old enough the boy should have the right to say whether he would sell his horse, or have it broken into work. To the young girl he would give a heifer calf. When the boy was old enough to take charge of a team, he should be allowed to work and put under crop a piece of land for himself. If a boy was employed on the farm he should be treated as one of the family, and if given a bonus after the year's work had been completed it would encourage him to keep on working. The boy should also be allowed a Saturday afternoon off to attend a cricket or football match, if he wished to do so. Many children were very fond of music, and he believed, if possible, in affording every child an opportunity of learning either the piano or violin. The speaker concluded with a plea that the hired boy should not be forgotten. If he was allowed to join in the games and music with other children it would make life on the farm very much more attractive for him. An interesting discussion followed.

**HAWKER, May 17th.**—The meeting was held with the idea of receiving suggestions for stimulating a keener interest in the work of the Branch. Promises were received from members to attend future meetings more regularly, and it was decided to hold the monthly meeting on Tuesdays nearest full moon, at 8 p.m., in the Foresters' Hall.

### MIDDLE-NORTH DISTRICT.

(PETERBOROUGH TO FARRELL'S FLAT.)

**BEETALOO VALLEY** (Average annual rainfall, 18in. to 19in.).

June 15th.—Present: 13 members and visitors.

**HANDLING A YOUNG COLT.**—Mr. W. Petrie read the following paper:—"In handling a colt for the first time he should be put in a good secure yard, so that you will be able to approach him in a quiet manner. Rope him, and after a time bring him up to a post. Then, when the struggling is over, place a halter on him, and gradually get him used to you. Let him see that you do not intend to hurt him. Next, put the bit in his mouth, and fix a rope to the bit. Keep him moving around the yard so that the animal will get used to you, and speak in a quiet but firm voice. I should then place an old saddle on him, but would not buckle the girth too tightly for a few minutes. Place two reins, running from the bit to the saddle, and let him walk about the yard for half a day. If feeding him, I should take the reins and the saddle off over night, and the next day repeat the first performance. You can then tighten the reins a little more. The colt will gradually mouth himself, and in a very few days he should be well mouthed, taught to lead and drive, and be then ready for riding. If it is desired to break the colt into harness, put it on, and buckle the traces to the breeching fairly tightly, and either lead him or drive him about, so that he will become accustomed to the harness. If patience and kindness have been exercised the colt should then be quite ready to drive in a brake. After a short time, he can be put in double harness." The officers were then elected for the forthcoming year.

### MINTARO.

May 21st.—Present: 11 members.

**SMUT IN WHEAT.**—The President (Mr. D. Kelly) gave an address on this subject. He did not think it was necessary to pickle seed wheat that was free from smut, but he advocated pickling the wheat from which it was intended to reap the seed for the next season. He preferred to sow wheat free from smut without pickling, rather than sow pickled wheat which was infected with smut. Wheat sown on dry land was just as liable to the disease as grain sown on wet land. He would use a 1 per cent. solution of bluestone, and after pickling the seed could be dipped in lime water of the consistency of milk, because it would ensure better germination. A good discussion then took place. Mr. D. Garrett, jun., thought that smut would not germinate after being dipped in bluestone. Mr. D. Garrett, sen., said he had lived in the dry northern areas, and had never been troubled with smut. Dry wheat sown in dry ground did not become affected with smut. He had not seen smut in a self-sown crop, and was of the opinion that the seed became purified when lying on the ground by climatic conditions.

**WIRRABARA** (Average annual rainfall, 18.91in.).

May 21st.—Present: 18 members.

**HORSES VERSUS THE TRACTOR.**—Mr. T. Winnecke, who contributed a paper on this subject, said as a rule fallowing was usually commenced after a good rain, and with a team of eight horses and a five-furrow plough the work could be started without any delay. In the event of one having a tractor it would be necessary

to allow the land to become fairly hard before the work could be undertaken. Harrowing with horse power would also be more satisfactory, because the implement and horses could be used to suit one's own convenience. Neither did he think it would be wise to use the tractor for cultivating during a wet spring. Summer weeds, such as stinkwort, &c., he thought could be destroyed with the aid of a tractor and disc cultivators. Again, at seeding time, most districts received a fair amount of rain, when it would not be advisable to use the tractor. The important aspect of the subject that one had to consider was which would be the more profitable for a farmer about to purchase a new plant—the tractor or horses. The initial outlay for the tractor would be about £700, while for the horses a stable with a straw roof could be erected for £60, engine and chaffcutter £200, 12 horses £300, chaffhouse and engine shed £90, making a total of £650 against £700 for the tractor. From the 12 horses one would be able to breed a number of young stock, and some of those, with the older horses, could be sold each year. The tractor, after it had been worked for one season, would only bring three-quarters of its first cost if placed on the market. He firmly believed that the horse was the more profitable means of working the land for the farmer to employ. An interesting discussion followed, in which Messrs. Borgas, Stephens, Woodlands, Bowman, Jericho, and Curnow took part.

#### YACKA.

May 17th.—Present: 25 members and visitors.

**BEST HORSE FOR THE FARM.**—"In my opinion, the best horse for farm work is the Clydesdale," said Mr. A. G. Fuller, in a paper on the above subject. Continuing, the speaker said the Clydesdale was an active horse, a good "doer," and had plenty of weight for a good pull if bred on the right lines. The crossing of the Clydesdale with the Shire, the Suffolk Punch, or the Percheron had often been suggested. Whilst the first cross with the Shire might be an advantage in obtaining a heavier animal, he would not recommend crossing for securing a better horse for general use on the farm. By crossing the Clydesdale with a Suffolk Punch or Percheron one would simply be reverting to the spring-dray horse. The best method to adopt to secure good horses was to breed them on the farm. It was necessary to have good mares, as well as the services of a good sire, for, after all, a nice horse would look and do better on the same or less quantity of feed than would a mongrel. A good stamp of horse would always bring a good price if one had a spare animal to sell, whereas a medium type was very often almost unsaleable. In the discussion that followed, Mr. Pelton disagreed that the Clydesdale was superior to the crossbred for farm use. Mr. Richards stated that from experience he found the Clydesdale-Percheron cross very much more active than the pure Clydesdale. The Chairman (Mr. W. Tillbrook) said the smaller horse was more active, and ate less than the heavier type. Mr. McCallum regarded the half-breed as the hardest type of horse, and said that the Northern bred horses (mostly crossbreds) were more easily kept, and showed more willingness to forage for themselves. The writer of the paper, Mr. A. Fuller, and Mr. P. J. Harvey advised all farmers to breed their own horses, whilst Mr. Roy Fuller contended that it paid to breed horses, and feed them well when young.

**BOULEROO CENTRE,** June 17th.—An interesting evening was spent receiving and discussing the report of the delegates to the recent Conference of Mid-Northern Branches of the Agricultural Bureau.

**MOUNT BRYAN EAST,** May 21st.—Members reported numerous deaths of sheep through the ravages of the blowfly. It was also stated that grasshoppers were doing a good deal of damage to the grass paddocks. A programme of meetings was compiled.

**NARRIDY,** May 21st.—Several interesting subjects were brought before the meeting. Consideration was also given to the selection of questions for submitting to the Annual Congress.

**REDHILL,** May 24th.—The Assistant Dairy Expert (Mr. H. J. Apps) visited the Branch, and delivered a lecture, "The Dairying Industry."

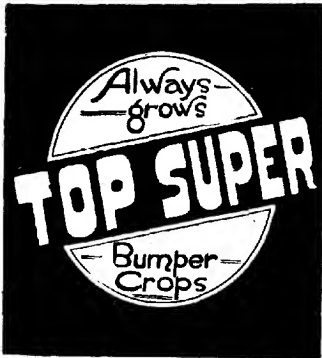
**LOWER-NORTH DISTRICT.****(ADELAIDE TO FARRELL'S FLAT.)****CLARE (Average annual rainfall, 24.30in.).****May 3rd.**

**NOTES ON THE PAST SEASON.**—Mr. M. Nolan contributed a paper on this subject, which was read by the Hon. Secretary (Mr. P. H. Knappstein). Black spot on vines had caused heavy losses in that district during the past seasons, but invariably, he said, the returns from gardens which were sprayed were much better than from those untreated, whilst the more frequently the sprays were applied, the heavier were the crops of fruit. Some gardens in that district gave good results without being sprayed, but those gardens were, almost without exception, situated in parts of the district which experience had shown were less liable, in fact, almost immune from the disease. Whether that was due to the soil or location, or a combination of both, was not known, but the fact was an interesting one, and might be pursued further with advantage. Based on the general average of growers' experience during the past season, they were unanimously in favor of early spring sprayings, and frequent sprayings so long as weather conditions were favorable to the disease. It was evident that spraying should be a part of the regular yearly routine of garden work, and the question of the best implement for the purpose was of paramount importance. The Bureau could be of great help in that connection, either through the exchange of opinions, based on personal experience, or knowledge gained from other districts situated similarly to their own. Some of the gardens were of such high natural fertility that the need for manuring had not yet asserted itself, but a great part of the fruit was from gardens of a lighter and less fertile quality of soil, and the quality and amount of fruit from those gardens was gradually improving owing to the application of

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manure. Expensive manures were not required, but superphosphate should be applied in fairly heavy annual dressings to the lighter and second-rate soils, in order to secure profitable crops. A good discussion followed the reading of the paper. Mr. Dux was in favor of power spraying outfits being purchased, and used on co-operative lines. He used a 4-4-40 strength of Bordeaux mixture, spraying four times in the season, and had been successful in combating black spot.

#### SADDLEWORTH (Average annual rainfall, 19.69in.).

May 21st.—Present: 10 members.

**A FEW HINTS TO FARMERS ON BANKING.**—Mr. H. G. Hastings read the following paper:—In dealing with this subject, I would strongly impress upon farmers the importance of systematically paying into their current accounts with the bank all cheques, cash, wheat certificates, and orders, &c., received by them in connection with sales of live stock, grain, and other farm produce, and the drawing of cheques in payment of all purchases, expenses, and personal items of expenditure. By adopting this system the passbook issued by the banker from time to time must, of course, be a true statement of the revenue and expenditure in connection with the working of the farm. Then again, this system enables the farmer—or his agent—to compile with accuracy and ease those much dreaded income tax returns. Also in connection with this system it is an excellent plan to dot down on each bank receipt the items which go to make up the total amount of the deposit. For instance, if a farmer lodges three cheques for, say, £2, £5, and £100, and, say, £10 in cash to the credit of his account at the bank, all he need do is to indorse the bank receipt in manner somewhat as follows:—Cream, £2; eggs, £5; 400bush. wheat, £100; one horse, £10; total, £117. These receipts should then be filed in order for reference at the time when income tax returns are called for by the Government. The same thing applies when drawing cheques—the items of expenditure being carefully filled in on the butt of each cheque form. To the writer's knowledge it frequently happens that a farmer requests a portion in cash for the wheat certificates or cheques he is paying in, and, with the cash so received, very likely purchases goods for the farm or else pays off store or other accounts. This practice is a very bad one. Providing the farmer keeps a set of books (and there are few who do) the practice would not matter so much, but where no records of income are kept how can that person possibly make out a correct return of his income for the year, to say nothing of the loss of time and worry he is put to in arriving at a fair estimate of his income and expenditure. In either case the better plan is to pay in every penny and draw cheques for all expenses, &c. Where there are several small items of expenditure, one cheque drawn for the whole will suffice, noting, of course, particulars on the butt. The demands made by the Taxation Departments nowadays are so insistent that it behoves all producers to adopt a system of keeping accounts of all operations, and the system just explained is the simplest and easiest for the farmer. The bank pass book is thus a balance sheet and ledger combined. **Drawing Cheques.**—This appears a very simple matter, and yet the numerous mistakes and omissions which occur justify a few remarks being made under this heading. Always sign your name by, or initial any alteration made on a cheque—your banker then knows that you made the alteration and not a rogue. When sending cheques through the post cross them (two parallel transverse lines drawn across the face of the cheque), and then write "Not negotiable" between the lines or crosses. This is the only protection afforded the drawer of a cheque against dishonesty or loss, and, is of far more importance than simply making cheques payable "to order," which practice is much overdone. The drawer (the person who signs the cheque) should not date it in advance, nor have the wording and the figures in disagreement. Do not sign your name differently to the specimen lodged at the bank, and do not make cheques payable to a thing, or a fictitious person, or to one who has no existence. When paying wages by cheques do not cross or mark them "Not negotiable" unless you know the wage earner has a banking account. By crossing your cheques you virtually instruct your banker not to cash them over the counter. Making them payable to order is not such a safeguard as people think, but, if you wish to make them so, do not add a prefix or title to the payee's name.



Cheques payable to order (that is when the word "bearer" is struck out) should be indorsed in the way the name is spelt in the body of the cheque, whether your name is spelt correctly or not. If the spelling is wrong, you should first write it that way and then sign in the usual manner underneath. A cheque payable to, say, "Mr. Thos. Smith" should not be indorsed "Mr. Thos. Smith," but simply "Thos. Smith." Never write out cheques in pencil. Whilst there is no law to prohibit you from doing so, it is obvious that the practice is a dangerous one. General.—No business man should cash a cheque for a stranger, even though he knows the stranger to be a wealthy man; the cheque may have been stolen, or payment may have been stopped, and a good title could not be obtained through a thief. Anyone receiving a cheque has a right to cross it, adding the words "Not negotiable" (if that has not already been done) or the words "For the credit of (filling in his own name) at the (filling in name of bank)." This protects the receiver in case of loss. The receiver (the payee) also has the right to make the cheque payable to his own order, also to insert the date on a cheque where same has been omitted by the drawer, but any other alteration or addition made to another person's cheque constitutes a criminal offence. The date of a cheque being that of a Sunday makes no difference to its validity. It is not generally known that banks accept money on fixed deposit at interest in the joint names of husband and wife—interest and principal being payable to either or survivor. In the event of the death of one of the depositors the survivor may draw interest and principal at maturity without the necessity of first producing probate of the will of deceased depositor to the bank. Nor is the amount subject to probate duty. Any client of the bank by making arrangements beforehand with his banker may cash his cheques at the city office or at other branches of the same bank. As the associated banks charge interest on the daily balance of an overdrawn account, farmers should not delay the depositing of cheques, wheat certificates, or cash, &c., to the credit of their account. The Savings Bank of South Australia calculates its interest by months on the minimum balance which shall, on any day between the seventh day of any month and the seventh day of the succeeding month, stand to the credit of the depositor. Therefore, when possible, deposit your money before the seventh day of the month, and make withdrawals after the seventh day of the month. An interesting paper dealing with "The Dairying Industry" was also read by Mr. A. Jamieson.

#### SADDLEWORTH (WOMEN'S).

June 14th.

Mrs. Fisk read a paper, "Nursing in the Home." The writer answered numerous questions, and advised how to deal with infectious cases of sickness, ventilation in the patient's room, and the feeding of the invalid.

#### TWO WELLS (Average annual rainfall, 16.36in.).

May 23rd.—Present: 11 members.

FODDER GROWING UNDER IRRIGATION.—In the course of a paper dealing with this question, Mr. J. W. Hart said the first essential was the provision of a good supply of water suitable for irrigation. That could be secured either by sinking bores or wells, or by constructing large dams. Next, one had to consider the best method of distributing the water over the land. For small plots, the windmill was the cheapest means, but where large areas of land had to be dealt with, some other system would have to be adopted, so that the land could be irrigated whenever the occasion arose. In selecting a site, one should choose a sloping piece of land, with a good subsoil and a slow, but perfect, drainage. Good results could be obtained by flooding, or the use of sprinklers. With the latter, it was not necessary to grade the land. If the water was of a hard nature it would not be advisable to use the sprinklers on hot or very windy days, as there was a danger of injuring the tops of the plants; there would also be a considerable loss through evaporation.


Again it was difficult to use the sprinkler on high crops. With flooding, the land should be graded to a gradual even slope, so that the water would spread evenly over the surface of the land. The land should be ploughed as deeply as possible several months before seeding; from 4in. to 5in. would, as a rule, suit most places. About 20 to 30 loads of well-rotted stable manure to the acre should be ploughed in, and the ground worked two or three times with the cultivator, going a little deeper each time, so as to loosen the subsoil and work in the manure. After each working, the land should be harrowed in order to bring it to a fine tilth and to destroy all weeds. He had tried Japanese millet, Sudan grass, Egyptian clover, sunflower, maize, and lucerne under irrigation, and was convinced that Hunter River lucerne was the best crop. Sudan grass did well, but it was not so good as maize. About 24lbs. of seed to the acre should be sown on a calm day, the seed being distributed evenly over the surface. Next the land should be light harrowed and rolled. Where dairying was carried on, green feed during the dry months of the year played a very important part in the flow of milk, and the dairy farmer should realise the value of the fodders in keeping the cows in good health and condition. It should be the aim of every dairyman to provide green feed for his cows during the summer.

#### VIRGINIA.

May 18th.—Present: 15 members.

DOWNY MILDEW.—In the course of a paper dealing with this subject, Mr. W. M. Wright said that although the disease had not as yet assumed any serious proportions in South Australia, advice had been received from the Director of Agriculture (Professor A. J. Perkins) to the effect that the disease caused by the parasitic fungus (*Plasmopara viticola*) had been definitely identified on vine leaves forwarded from the Clare district. The presence of the disease had been suspected for some time past in the McLaren Vale district, but it was only recently that it had been positively identified for the first time in South Australia. For some years past it had given trouble in the Victorian and New South Wales vineyards, having been imported into those States on rooted vines introduced from Europe. It was anticipated that in the course of time it would become another addition to the diseases already established in South Australia. It had been stated, however, that while the disease seriously affected vine production in those countries in which relatively moist conditions obtained during the growing period, there was sufficient experience to show that it was only in exceptional years that it was likely to affect the position seriously in South Australia. General methods of treatment consisted of periodical sprayings with Bordeaux mixture. So far as South Australian growers were concerned for the present, there were no steps that could be taken until next spring. Once downy mildew appeared, and the weather was favorable towards its development, the disease spread through the vineyards with great rapidity, and every grower should take the utmost precaution to attend to his vines, and spray without delay at the proper time. Mr. Leo Buring (wine expert, of Sydney), who had carefully studied vine diseases, recently explained at Renmark the nature of downy mildew. Like many of the diseases that were now causing vignerons, and others interested in fruit growing, great annual expense, he said downy mildew came from America, and had been noticed in France 43 years ago. Three years later it had appeared in almost every district of France, Italy, Germany, and also in the hot climate of Algeria. Downy mildew was the most destructive of all fungoid diseases that affected the vine in any part of the world, and the financial losses were greater than any caused by phylloxera. Five hundred miles was no bar to the spread of disease by summer spores. If the leaves of a vine properly infected were picked and placed on a surface that covered 9 sq. ft., the vine would have no fewer than 90,000,000 spores, and these were so light that the merest wind would lift and carry them for miles. It was remarkable that these spores, although so light, did not cling to under surfaces, and so it was that on vines not yet affected by the disease, no spores were found on the under side of leaves, but spores brought by the wind were found on the upper surfaces. That would explain why, when spraying the vine, it was not necessary to wet beneath the surface of the leaves, but to spray all green parts, shoots, and grapes upon which the spores might settle. Continuing, Mr. Buring said that a little more than

a year ago he inspected a certain vineyard in Queensland, and could find no trace of the disease. During the present spring the visitation had been so severe that, instead of a crop giving 9,000galls., less than 100galls. had been the result. Downy mildew was first and most easily noticeable on the leaves, although any green part of the vine was open to attack. The first signs were small yellowish spots, known as oil marks. If the weather turned hot and dry, the disease was arrested, and the yellow spots burned brown, the same as when attacked by harmless fungi. It did not fall off. Under favorable conditions, and with a temperature ranging from 65deg. to 75deg., and especially in muggy weather, the fungus developed rapidly, and after a time began to throw out its fruiting columns from the under side of the leaves. The spore-bearing branches were whitish in appearance with the spores they carried, and gave the characteristic down, from which it derived its name. When that happened, the leaves, if hot weather intervened, curled up, and soon dropped off, and the fruit and canes were left exposed to the sun. The shoots were also attacked, but never when grown into wood. They became soft and spongy, and, if badly attacked, died back to the old wood. That happened chiefly in autumn, as the wood so attacked did not ripen, and at pruning time apparently sound wood was quite dead. Vines attacked year by year without treatment would die in six years, and younger vines in a shorter period. Bordeaux mixture was the one and only spray to combat downy mildew. The first spraying should be done early in the season; the second just before or after flowering, depending upon weather conditions, or during flowering if bad weather set in; and a third when the vines were full grown. The mixture should be made just before application, and the addition of some casein, 1oz. to 10galls., made it more adhesive. The vine




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should be well covered with the spray, and the job done quickly. The casein was mixed dry with two handfuls of slaked lime powder, made into smooth paste with water, ½ gall. of which should be added and mixed with the Bordeaux mixture just before using. Mr. Wright answered a number of questions, and a discussion followed.

BLACK SPRINGS, May 16th.—Mr. F. Coleman (member of the Advisory Board of Agriculture) attended the meeting, and delivered an address, "Wheat Varieties."

LONE PINE, May 17th.—The evening was devoted to the reading and discussion of a paper contributed by Mr. J. Warnest, "The Planting of a Young Vineyard."

LYNDLOCH, May 19th.—Matters relating to the vine pruning competition, to be held under the auspices of the Branch of the Bureau, were brought forward for consideration.

MALLALA, June 13th.—Mr. R. L. Butler, M.P., visited the Branch, and delivered an address, "Bulk Handling of Wheat."

NANTAWARRA, May 19th.—Mr. R. P. Uppill contributed a short paper on "The Wheat Pool." An interesting discussion followed, in which the majority of members considered that a compulsory wheat pool would not be necessary for future harvests.

ROSEDALE, April 20th.—The meeting took the form of a social gathering, and a large number of members and visitors spent a most enjoyable evening. At a further meeting, held on May 20th, Mr. H. Nettlebeck contributed an interesting paper, "Farming in New South Wales."

SALISBURY, June 7th.—Mr. W. H. Neal contributed a paper, "The present-day prices compared with those of 25 years ago as regards livestock, wages, and farm produce."

TWO WELLS, June 20th.—The Hon. Secretary (Mr. H. W. Kenner) read a paper from the *Journal of Agriculture*, "Trees on the Farm."

WILLIAMSTOWN (WOMEN'S), June 1st.—Mr. J. S. Hammat (Hon. Secretary of the Lyndloch Branch) attended the meeting, and gave a practical demonstration of rose pruning.

## YORKE PENINSULA DISTRICT.

(TO BUTE.)

BRENTWOOD.

March 24th.—Present: 10 members.

POULTRY.—Mr. F. Babbage, who read a short paper on this subject, said fowls were a profitable side line if the farmer gave them proper care and attention. They should be given as much food as they could eat at the morning and evening meals. He expressed a preference for wheat as a feed for the birds, and as a change of diet he suggested soaked barley. During the winter months the fowls should be given a warm mash every morning. One of the most important points in successful keeping of the birds was to provide them with a good supply of clean water. When the fowls were not fed properly they were a constant source of annoyance in the stables and hay yard. He believed in allowing the birds plenty of freedom, for he contended that when they were shut up they were more susceptible to disease. White Leghorns and Minorcas were the breeds favored by the speaker, but the main point was to secure birds from good laying strains. In order that the standard of the flock might be maintained he thought it was advisable to obtain pure-bred roosters and to introduce new blood every two or three years. In the discussion that followed, Mr. J. Boundy believed fowls to be a payable proposition.

being much less trouble than cows. The greatest difficulty in that district, however, was the fox pest. Mr. R. Anderson thought that fowls should be fed regularly twice a day. He quoted a case in which common "barn-door" fowls had done splendidly when fed properly. He considered that soft foods should be fed in the morning and hard grain in the evening. Mr. J. H. Boundy, in discussing the breeds, said much depended on whether the fowls were reared for tables or egg production. He thought it possible to obtain breeds that were fairly serviceable in both respects, and these he considered the most suitable for the farm. Mr. J. J. Honner had secured excellent results from feeding fowls with warm boiled wheat for their first meal in the morning. He advised members not to keep ducks and geese with fowls, as they contaminated the water. In his opinion, pure drinking water for fowls was an absolute essential. For that district he favored keeping the light breeds for egg production. He considered that very often too many roosters were kept, and it would prove beneficial to shut up the young cockerels. Mr. A. Twartz spoke strongly in favor of young hens as the chief factor in egg production. He had found that barley soaked overnight seemed to suit fowls very well.

#### MOONTA (Average annual rainfall, 15.22in.).

May 27th.—Present: 14 members.

**CARE OF HORSES' SHOULDERS.**—Mr. E. C. Atkinson read a paper on this subject. The first thing to be taken into consideration, he said, was the initial handling of the young animal. It was a practice among some farmers to work the colt in an old collar until their shoulders became "set." That was a mistake. Before the young horse was worked a well-fitting, leather-lined collar should be secured for the animal. If the collar fitted "snugly," and the colt was not worked too long at a time, much would be done to avoid scalding the shoulders. There were a few tools he would suggest as necessary in the stables to assist in the prevention of sore shoulders. The first was a small hook, which could be made out of fencing wire, and by the slight insertion of a knife in the side of the lining of the collar, sufficient of the padding could be removed, which would sometimes prevent a sore from developing on the shoulder. Another useful tool was a wooden mallet, weighing about 2lbs., by means of which a lump could be tapped out of a collar, which otherwise might cause trouble. His chief reason for preferring leather linings was that lumps seldom occurred in that class of harness. Another most important article in every stable was a good dandy brush. The shoulders should be carefully brushed, and the hand passed over them before the collars were put on the horses. If the skin was rough, or if lumps could be felt under the skin, the collar should be examined, and the lumps, dry sweat, or dust removed. He had seen horses working in collars with wheat bags over their necks. Fancy stuffing one's boots to make them small enough! Another thing that caused sore shoulders was the whip. He admitted that the use of a whip was at times necessary, but there were only a few drivers who knew when it should be used. The following members took part in the discussion:—Messrs. W. A. Edge, G. Page, A. Middleton, C. Cooper, A. B. Ferguson, and J. Atkinson.

**BRENTWOOD, May 5th.**—The Assistant Dairy Expert (Mr. H. J. Apps) visited the Branch, and delivered a lecture, "The Dairying Industry."

**PASKEVILLE, May 17th.**—Mr. J. C. Price read a paper, "Marketing of Wheat." It was decided to donate £3 3s. as a special prize to the Field Trial Society at its meeting to be held at Bute on August 17th.

#### WESTERN DISTRICT.

**BUTLER** (Average annual rainfall, 16.61in.).

March 21st.—Present: 14 members and visitors.

**THRESHING ON THE FARM.**—Mr. V. B. Stewart, who contributed a paper on this subject, stated that threshing was a very profitable proposition, especially with wheaten hay, for very often, with a heavy crop, there was too much corn, and by

threshing one was able to utilise the corn to a better advantage, and at the same time have an abundant supply of horsefeed. He admitted that crops in other countries, where threshing was the usual way of harvesting the crop, were often of heavier yield than those in Australia, yet the extra expense of binding and threshing would return a good remuneration. The straw was also a valuable asset, for it was 50 per cent. better than the straw raked from the paddock after the harvester had been over it. If the straw was not required for immediate use it could be conserved for drought periods. Experts on that subject had repeatedly stated that if the wheaten hay was cut a little on the green side a better sample of grain could be obtained, and the straw could be fed to stock to advantage.

**WATER CONSERVATION.**—In a short paper on this subject, Mr. D. B. Butler said the most essential element in any new farming district was a sure supply of good water. Where wells had been unsuccessful he advised using a 6ft. buck-scraper and a strong single-furrow plough. Two dams should be excavated, the first, a chain square on top, with sloping sides, so that it could be ploughed each way. For the second excavation he suggested a long dam, with very steep sides, and a cover to avoid evaporation. The second dam should be kept as a standby, and no stock allowed to walk into it. A good cement tank was the most suitable structure for water conservation. It would be a great benefit to the settlers if a pipe was laid down the centre of each hundred as soon as it was surveyed. Mr. P. Parker also contributed a paper on "Water Conservation."

**SHEEP ON THE FARM, SHEARING, AND DIPPING.**—At a further meeting held on May 23rd a paper on this subject was read by Mr. A. J. Hughes. The speaker said that in a previous paper he had advocated the Merino in preference to cross-breeds on account of there being no local market for the disposal of fat lambs, and that he also favored the Merino because better returns were received for the wool. Since he had read the last paper the position had not altered with regard to the meat market, but since the termination of the war the wool market had received a serious check owing to the heavy accumulation of large clips of wool, and the dislocation of the woollen industries in Great Britain and Europe. When those facts were taken into consideration he did not think the wool market held many inviting prospects from the farmer's point of view. At the last wool sales only a very small number of the best quality farmers' clips had been sold. He believed a system of co-operation would help in the better disposal of the wool. If the flocks were started with an even class of large-framed, strong-wooled Merino ewes, and mated with well-bred Merino rams, the wool could be pooled locally, properly classed, and offered in one lot at the sales. Also by a scheme of co-operation it would be possible for them to erect a central wool shed with a two or three stand shearing machine. There would not be so much trouble with the shearers, and the work would be done more satisfactorily. The same would also apply to the erection of a sheep dipping outfit. An interesting discussion followed the paper, in which Messrs. Tilly, Parker, Pützner, and Phillis took part.

EDILLILIE (Average annual rainfall, 18.45in.).

May 7th.

**EARLY LAMBS AND HOW TO PROVIDE FOR THEM.**—The following paper was read by the Hon. Secretary (Mr. J. F. Carter):—"I think it will be generally admitted that if proper attention is given to the mothers, early lambs are better than late ones. Which will return the better profits depends very largely upon climatic conditions, class of sheep, and the methods employed in raising them. To successfully provide for lambs dropped in April one will have to be prepared to be almost totally independent of natural feed during March, April, and May. Two crops will be necessary for this, for which provision must be made the previous winter and spring. The first to be sown will be a plot of peas in late winter, and the other, a plot of sorghum, in spring. The peas can be left until the middle of March before turning the ewes on them, but if the stock are sufficiently well on the stubbles, the point to be remembered is that the longer one delays grazing of the crops the longer will they last. However, care must be taken to have the ewes in strong condition for lambing, even if it means utilising the peas earlier than intended. The sorghum will be available when the lambs are dropped, and the two crops together will then carry them on to the end of May. The sorghum

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will need feeding back before the lambs come, as it must not be allowed to mature; but this will do it no harm, as it will keep on growing until the cold weather sets in. The best time to graze the plants is when the seed heads appear, but sheep will eat it at any stage if no other green feed is available. They will take it in preference to stinkwort, which is always more or less prevalent at that time, and will therefore go far towards eliminating casualties from that source. *The Cost.*—The area of crop required, putting it at a liberal figure in case of partial failure, will be one acre of each fodder to every 10 ewes. The cultivation expenses will be nil, as one's earliest fallow can, with advantage, be used for this purpose. The cost of seed would be—3lbs. sorghum per acre, at 1s. per lb., mixed with 60lbs. super, 4s.—7s. per acre. One bushel peas, at 7s.; 60lbs. super, 4s.—11s. per acre. Two acres at 9s. per acre for 10 ewes with 90 per cent. lambs would work out at 2s. per head for each lamb. Against this would be the indirect value derived from the more concentrated sheep droppings returned to the land, and the beneficial effect of the pea crop.

#### GREEN PATCH (Average annual rainfall, 26.56in.).

May 16th.—Present: 11 members.

**SALT FOR STOCK.**—The monthly meeting of the Branch was held at Mr. K. McFarlane's residence. A short address on the subject, "Salt for Stock," was given by Mr. Proude. He pointed out that even in saltbush country sheep did much better if they had the free use of a good salt lick. He had given salt to some of his stud ewes, and found a marked difference in the condition of the ewes that had had access to the licks over those that had no salt. Mr. Provis then read a paper, "Lambing." Mr. Proude spoke on tobacco growing in the Port Lincoln district, and believed that from the plants that he had seen growing locally the crop could be successfully grown in theirs and the surrounding districts. Mr. Parker then read an article, "Tobacco Growing," from the *Journal of Agriculture*.

#### LAKE WANGARY.

May 21st.—Present: eight members and two visitors.

**BREEDING GRADES OF CATTLE.**—Mr. L. H. Wood contributed a paper on this subject. The best available heifers, he said, should be selected and mated with the best bull procurable. If breeding beef cattle, the sire should be of fair size, with great loins, rumps, and thighs, and round ribbed to the hip bones; if for milk, the head of the herd should come of a line of uniform milkers and possess all the best characteristics of the breed, because he would impress upon his progeny all the qualities of the race from which he came. They should not be allowed to mix with other cattle, and the calves should be reared in the best manner possible with the sire and dams in the paddock. At the age of two years they should be bred to their sire, and so on until the fourth generation, which would be at the end of 10 years. They would grade as follows:—First generation, half-blood; second generation, three-quarter; third generation, seven-eighths; and fourth generation, fifteen-sixteenths. That might seem close breeding, but the records of the improvement of animals would show very much closer in-breeding. In breeding so closely, it would be necessary to use great judgment, because the constitution of the animals would become delicate, and they would require better care than animals of a coarser nature; but they would repay for the care and attention bestowed on them in increased profits. If the animals began to suffer in constitution, another sire should be procured, and breeding continued on the same lines; but once having begun with pure sires on native stock, a grade animal should not be allowed to become a sire, because it would result in loss. In-breeding could not be carried out so closely in pigs. A good discussion followed the reading of the paper.



## McLACHLAN.

May 17.—Present: 13 members and one visitor.

**LATE SOWING.**—Mr. J. W. Hayman, who read a paper on this subject, said the usual months for sowing in that district were April, May, and June, but in the majority of cases the actual time for drilling depended on the seasonable rains. One of the chief objects of cultivation was the conservation of moisture and the encouragement of plant life. Air was also necessary in the soil to create nitrates, which were an essential plant food. Ordinary cultivated land was always thoroughly inoculated with bacteria, and healthy conditions of soil were necessary to secure their effective operation. Badly tilled soil was an impossible medium for nitrification, and, owing to the lack of oxygen from the air, the germs were forced to draw upon the nitrates already present. The maintenance of a healthy, sweet, and aerated tilth, in which soil organisms could grow, multiply, and work freely, rested in good cultivation. The working of the soil whilst in a wet condition assisted the conservation of moisture, which was so necessary for the plant throughout its life. If the ground was worked whilst dry it would not receive thorough cultivation, and there would be a loss of moisture by absorption. A good discussion followed the reading of the paper, the majority of members agreeing with the views of the writer. The Chairman (Mr. W. E. Hawke) thought that where farmers were sowing a large area on scrub land it was not always advisable to wait for rain, and until scrub farms were sufficiently worked to permit of a large area being fallowed, it would pay to sow early and get in a large quantity of seed. Mr. Edwards then delivered a short address, "Oil Engines."

## SMOKY BAY (Average annual rainfall, 13.06.).

May 21st.—Present: nine members.

**FARM GARDENING.**—The Hon. Secretary (Mr. J. W. Blumson), who contributed a paper on this subject, said he had found it best to confine gardening to places which received the most water. The gullies in their district were flooded at intervals, and if sufficient water was received, and protection from wind afforded, vegetables grew exceedingly well. The soil in the gullies was very rich, and, as a rule, the water soaked away rapidly, and no damage was done through excessive moisture. Building walls facing west or south should have plants of some description growing at the foot of them. The water running down the side of the building would be useful. Such places were good for growing parsley, mint, and sage, and tomato plants would not be affected by frost. The overflow waters from all underground tanks should be used by running on to an enclosed garden on the low side of the tank. An embankment should be made so that the water would lie and soak into the garden. Many such places could be utilised for growing lucerne if not required for vegetables. The ground should be stirred up after every irrigation, and a dust mulch maintained to conserve moisture. When water was plentiful a supply could be obtained from the tanks. Although he had seen good vegetables secured after broadcasting, he favored sowing in rows, and cultivation. When sowing seed or plants where they could not be irrigated, it was a good plan to make a trench a few inches deep, sowing the seeds or plants at the bottom. He obtained the best results from such plants as beet, carrots, swedes, kohlrabi, onions, as well as lettuce, cabbage, and cauliflower by sowing the seeds early in plots or boxes, and transplanting during favorable weather. All root crops did well in the gullies, and lettuce, silver beet, and spinach would provide a constant supply of greens. It was best to utilise the gullies for winter vegetables, reserving the plots at the tanks for summer crops and seed plots. If the gullies became flooded in the summer time, melons and other summer crops could be planted. Melons planted on fallow land generally did well, and seed could be sown in all favorable places on the farm for a catch crop. It was a mistake to sow too thickly, for it often happened that they could not find time to thin or weed the plants. Lime should be sprinkled around young turnip plants to combat blight. Fowl manure, wood ashes, soot, &c., could be used in the tank gardens. Planting should be rotated so that no two crops of the same variety were grown in succession. Rhubarb would also do well at the tanks. Regarding fruit trees,

the speaker said the ground should be thoroughly prepared beforehand, all dead or broken roots removed, a little Stockholm tar put on the cuts, and the tree closely pruned. The white ants attacked the dead and broken roots if not removed, and often destroyed the tree. The tree should be planted in a depression, so that the water would run towards the trunk, and tied to stakes and protected from the wind. The ground should be kept clear of weeds, and a dust mulch maintained. Mr. Lovelock tabled a specimen of "dogweed," and advised members to destroy the plant, as it was a troublesome and useless weed.

#### YADNARIE (Average annual rainfall, 14.09in.).

May 18th.—Present: 11 members and visitors.

PREVENTING SANDY SOIL FROM DRIFTING.—In the course of a short paper dealing with this subject, Mr. W. J. Barnes said if the farmer had to deal with white sandy land it should not be fallowed, but simply ploughed before the seed was sown. For land not so light as sand he thought it advisable to make a practice of fallowing early in the season, and sowing a crop of oats. That would assist in preventing the sand from drifting, would act as a check to take-all, and also make a better seed bed for the following season's crop of wheat. The oat crop should be fed down with sheep, for if allowed to grow too high the plants would take too much moisture out of the soil. In the discussion that followed, Mr. W. E. Hier said that he had found red and brown sand more subject to drift than the white sand. He favored bare fallowing, but if a cover crop was grown, he would prefer to sow rape rather than oats. Mr. F. W. Jericho advocated working sandy land in alternate strips three chains wide, running east and west. That he considered, would prevent any land in their district from drifting. Mr. A. C. Kruger thought it advisable to grow a cover crop on fallowed sandy land, but preferred oats to rape, because in most cases it would be too late in the year to obtain satisfactory growth from rape on fresh fallow. The oats should be grazed before going to seed. Mr. A. Crabb thought it desirable to fallow deep, and, if possible, turn up some of the clay subsoil to the surface. The Hon. Secretary (Mr. J. H. Kruger) said working the land in strips, as advocated by Mr. F. W. Jericho, would not prevent sand drifting. Sandy land subject to drift should be fallowed when the soil was wet. It would be a decided advantage if one was able to turn down a good mat of green herbage, as that would hold the land together. All succeeding workings should be done only after good rains. Sheep should be turned on the fallow to keep down weeds, but only when the surface of the land was wet. The soil should again be wet at seeding time, and quick-growing varieties of grain sown with heavy applications of super. Mr. O. Forbes thought the land in question should carry two crops, and then be allowed to lie out for three or more years. It would be an advantage to take off every other time from the implement used, in order to leave the land in a rough condition. He favored early sowing for that class of land. Mr. P. G. Dolling thought no harm would result to fallow drifting land. At seeding time he would drill east and west, and sow late in the season. Straw might be spread on small patches likely to start the drift going. The Chairman (Mr. A. Jericho) said he would fence the paddocks in an easterly and westerly direction, and he favored soil tillage when the land was wet. He agreed with the Hon. Secretary that three-chain strips would not prevent drift. He would sow sandy land early in the season. Mr. O. Kruger thought it was best to leave the scrub on land such as referred to in the first part of the paper. Mr. J. E. Quick said red and brown sands were lighter in texture than white sand, and they would, therefore, drift more easily.

#### YEELANNA.

May 21st.—Present: 15 members and visitors.

SMUT OR BUNT OF WHEAT.—The Hon. Secretary (Mr. W. D. Wemyss), who contributed a short paper on this subject, said many conflicting opinions were heard from farmers regarding the best methods to adopt for dealing with smut

and bunt infested seed. He had come to the conclusion that the wisest and safest procedure was to pickle the grain. Different methods were adopted for treating the grain, but the one usually adopted and recommended as the best was to pickle the seed on a floor, so that by turning it backwards and forwards each individual grain would come in contact with the pickling solution. An interesting discussion followed; some members spoke in favor of floor method, whilst others spoke of the good results they had obtained by pickling the grain in a cask.

CLEVE, May 26th.—Mr. H. Hamilton read a paper, "Gambling with Science." The members to represent the Branch on the committee of the local Field Trial Society were also elected.

KOPPIO, May 16th.—Mr. G. B. Gardner contributed a paper, "Providing Fodder for Dry Seasons." Members favored the planting of pease and sorghum for that district. Several members stated that they had obtained very good results from lambing ewes that had been grazed on those crops.

McLACHLAN, June 4th.—Mr. C. Dawson read a paper, "Dealing with Mallee Shoots." An interesting discussion followed, and the speaker replied to a number of questions.

McLACHLAN.—The following is a copy of the programme of meetings that has been compiled by the above Branch for the period ending October, 1921:—August 6th, Question Night; September 3rd, "Inbreeding and Hay Growing," Messrs. T. Bailey and W. F. Attick; October 1st, "Gardening," Mr. Hetzel, sen.

PETINA, April 16th.—A special meeting of the Branch was called to bid farewell to Mr. G. Newbon, who was leaving the district. The Chairman (Mr. W. Penna), on behalf of the members of the Branch, presented Mr. Newbon with a case of pipes as a token of appreciation of the good work that he had done for the Bureau. The meeting in the evening took the form of a social gathering, when addresses were delivered by the Chairman (Mr. W. Penna), the Hon. Secretary (Mr. W. L. Schulz), and Mr. W. E. Stone. Mr. Newbon, in a short speech, acknowledged the thoughtful act of the members of the Branch.

SMOKY BAY.—The following is the programme of meetings of the above Branch for the year ending December, 1921:—July 16th, "Shearing," Mr. H. W. Tremaine; August 13th, "Experimental Work"; September 17th, "Haymaking," Mr. F. Gregor; October 15th, "Water Catchments"; November 12th, "Co-operation"; December 10th, "Harvesting."

WUDINNA, May 21st.—The Chairman (Mr. W. DuBois) read an interesting paper, "The Value of Scientific Research," which provoked an interesting discussion.

## EASTERN DISTRICT.

(EAST OF MOUNT LOFTY RANGES).

### BORRIKA.

May 21st.—Present: 9 members and visitors.

The meeting was devoted to a discussion of subjects of interest to local agriculturists. In reply to a question as to the best depth to sow wheat, Mr. Brown said he favored shallow drilling when the land was wet. Mr. Brown suggested that members should keep a true record of a plot or portion of their crop. He promised to give the members full details of a piece of land that he had sown with four bags of Felix wheat. Mr. Cowled also promised to give members the benefit of his experience after next harvest. The same speaker said that he had successfully grown Sudan grass on his holding. Messrs. Brown and C. L. Tonkin gave a favorable report of Johnson grass. Both gentlemen stated that the horses were very fond of it.

## BRINKLEY.

May 21st.—Present: 14 members.

CARE AND MANAGEMENT OF FARM HORSES.—The following paper on this subject was contributed by Mr. E. W. Pearson:—"On most farms, at seeding time, all the horses available are called into use, as it is of the utmost importance that as soon as conditions are favorable the seed should be placed in the soil as quickly as possible. Consequently, seeing that the farm horses play a very important part in this work, care should be taken to see that they are in fit condition before starting, and every effort made to keep them so during the whole of their working period. In the first place, it is important to have a sufficient number of horses, and the number, of course, depends on the number of implements to be used, and the area to be sown, and in all cases it is a wise practice to have one or two spare ones to use in cases of emergency. And it is also important to feed liberally and regularly. Feed on good wholesome hay chaff, oats for preference, provided that the horses are given as much as they can eat without wasting any, and a sufficient time to eat it. They will not require anything else. The farm horse should be fed at, say, 5.30 a.m., and should be allowed 1½ hours for breakfast. During this time he should be watered and well groomed. He should then be ready to go to work at 7 o'clock. At noon the horses should be watered again, and allowed another 1½ hours for dinner. At night they should be again watered and fed, and placed in a good comfortable stable, and bedded down in the winter time with straw; but in warm weather I prefer leaving them loose in a good roomy yard. In any case, every horse should have his own stall, and a place to hang the harness. The horses should be cleaned down again after tea, and should be fed up for the night between 8 and 9 o'clock. In my opinion every farmer should try to breed his own horses, and also to improve the breed as far as possible, by securing the service of the best sire obtainable. Breed from mares that are of sound constitutions and proved workers. Look after your foals well, especially when they are weaned. When taken from the mother they should be well fed on chaff and oats. If well grown, and in good condition, the colt can be put to work at two years old, care being taken not to overwork him the first season. Start him off with a few hours a day, and gradually increase the time, provided the work is not too heavy, and he will soon be fit for a full day's work if properly handled and cared for. The brood mare must be kept in good health and condition in order to throw a good strong foal. Work the mare if you require her up to within a fortnight of foaling, and she will be all the better for it, but let the work be of such a nature that she does not require to strain herself through heavy pulling, or she may lose the foal and perhaps her own life as well. Horses should not be retained on the farm, except in the case of a good brood mare, after they are, say, 12 years old, as they cannot do the work of a younger horse, and they require far more attention to keep them in working condition. Every farmer should keep on hand a supply of medicine for use in common ailments. Prevention is better than cure, and it is a good plan to keep a supply of rock salt or salt lick of some kind in the manger, as it will help to keep the horses in good health." An interesting discussion followed, in which Messrs. Wilhelm, Richards, and Lemmy took part.

## COONALPYN (Average annual rainfall, 17.49in.).

March 18th.—Present: six members and three visitors.

THE HOUSEHOLD WATER SUPPLY.—Mr. J. F. Pitman, who read a paper on this subject, said the care of the water for household purposes was a point too often overlooked by people in rural centres. If the supply was derived from roof catchments, the guttering should be examined and cleaned out at the approach of the winter months. Where the water was stored in an underground tank, it was not an uncommon sight to see the pig bucket placed on one corner of the roof, and a number of fowls perched on another corner. If the house water supply was obtained from tanks at the stables, provision should be made to prevent bird droppings and manure from getting into the water. If it was necessary to drink water that had been caught from roofs, he thought it was a good plan to dissolve

some bluestone in the water. Conical-shaped tanks would not provide such a large top surface for collecting dust. For an underground tank he suggested a hip-roof, so that nothing could be placed on the top of it. Finally, all tanks should be cleaned out at least once in every three years.

**SEEDING SUGGESTION.**—At a meeting held on April 22nd, Mr. J. Cronin read a paper on this subject. The speaker suggested that in cases where it had not been possible to prepare good fallowed land, one should endeavor to secure a good burn. All the implements should be thoroughly overhauled, and plenty of strength provided for their proper working. If rain fell in April a start with the seeding should be made in that month. Failing a good rain, the clean land should first of all be sown. If necessary, the grain should be pickled, care being taken to see that each grain came in contact with the solution. For cleared land, he suggested a dressing of lewt. of super to the acre; and in places where the shoots had not been destroyed 2cwt. to the acre should be applied. The harrows should be used at every opportunity, and those portions of the crop that were to be cut for hay should be levelled off with the roller.

**POINTS OF INTEREST TO FARMERS.**—At a further meeting, held on May 20th, the evening was devoted to a discussion on items of local interest. Members were not in favor of fallowing land that had been burnt, and they preferred putting the soil immediately under crop. If left as fallow, there was no immediate income from it, and the bushes grew very vigorously. **Roads.**—The Branch considered settlers should have an "honorable understanding" not to use the main roads when in a soft, boggy state. Miles of track could be and had been ruined by wet-weather carting. Mr. Gurner said that teamsters should not always use the same track on the metal, and, if possible, they should always keep to the left of the road. Messrs. Wall and Tregenza considered that the supervision of road construction was in many cases shamefully lax. **Advantages of Bureau.**—Members

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were warm in their appreciation of the Bureau system, and various concessions and advantages derived therefrom. The Hon. Secretary (Mr. F. Tregenza) thought the meetings should be made as breezy and attractive as possible, to encourage the younger men.

#### LONE GUM.

June 15th.—Present: 24 members and visitors.

An interesting and instructive paper, "Rack-building," was contributed by Mr. Moritz. The paper was well discussed, and many questions were asked and answered.

At a further meeting held on June 22nd, the annual report was presented by the Hon. Secretary (Mr. P. B. Thomas), and the officers for the forthcoming year were appointed. A programme of meetings was also compiled.

#### MONARTO SOUTH (Average annual rainfall, 14in. to 15in.).

May 25th.—Present: 15 members.

FARM MANAGEMENT.—In a paper under the heading, "Some of the Disadvantages of Farming and How to Deal with Them," Mr. G. Patterson first referred to the loss that the farmer sustained through smut in the wheat crops. The best way to secure clean crops was to sow only pure and clean seed; if that was not always possible, the farmer should always pickle his seed. The appearance of red rust in the crop, he believed to be due to rank growth and climatic conditions; but the losses could be considerably lessened if farmers were to sow a fair proportion of rust-resisting wheats. Take-all was another disease that attacked the wheat plant, and was one that was responsible, in some seasons, for a considerable amount of damage to the crop. He thought the ploughing in of dry grass and rubbish when the land was in a semi-dry condition had much to do with the spreading of the disease. If possible, one should endeavor to run a fire over such land. If a piece of land had suffered to any extent through the ravages of the disease, it was a good plan to sow a crop of oats the next time that paddock was put under cultivation. Rabbits and foxes were also causing many farmers a good deal of trouble. With the rabbits, he believed the destruction of all warrens and concerted action in killing the rodents would reduce their numbers. He thought it would be a good plan if all land holders were to lay baits for foxes just before the commencement of the lambing season. If the baits were prepared in the form of dead sparrows or starlings there would be very little danger of dogs or other stock picking them up. An interesting discussion followed.

#### PARILLA WELL (Average annual rainfall, 16in. to 17in.).

May 23rd.—Present: 11 members and visitors.

SEEDING EXPERIENCES.—In the course of a paper under the heading, "Quantities of Seed and Super and Varieties of Wheat for Seed," Mr. J. E. Johnston said he intended his paper to take the form of an account of his experiences since coming to that district 15 years ago. The paper continued as follows:—On new land I would not sow too heavily—from 40lbs. to 60lbs., according to the variety of wheat, but I think heavier dressings of super should now be used. When we started in this district, the quantities sown on new land were only 30lbs. to 40lbs., but experience has shown that 70lbs. or 80lbs. would not have been amiss from the start. On fallow land I would sow from 80lbs. to 120lbs. Quantities of seed on fallow land depend to a large extent on the variety of wheat and the condition in which it is harvested. The thickest crop I have seen in this district on clean land was only sown at the rate of 30lbs. to the acre, but the seed was almost perfect. Most of the present harvesting machinery cracks the grain badly, and on this account we must sow more thickly, especially hard-grained wheats. Soft grain, such as Federation, need not be sown so thickly, as it is not so liable to

crack, and it is a good stooler. This wheat should be put in first, as it grows slowly in its early stages. It should be sown in such a position that it will be convenient to reap on damp mornings in the harvest time, when Yandilla King and many of our other wheats are too tough. Yandilla King and German Wonder are two good wheats, largely sown at the present time. Gluyas is a good wheat for late sowing. This is a wheat I would not advise anyone in this district to sow before the beginning of June, because it has a tendency to 'go down' very easily. On fallow land I advise sowing at the rate of 45lbs. to 50lbs. Federation, 50lbs. to 55lbs. of Yandilla King and German Wonder, and Gluyas 60lbs. to 70lbs. I would not sow thicker if the seed is good, because it reduces the size of the head and weakens the straw, and it is more liable to go down." An interesting discussion followed.

#### POMPOOTA.

May 11th.

**MILK TESTING.**—In the course of a paper dealing with this subject, Mr. N. Forrester said when using the Babcock tester one was supposed to take a sample weighing 18 grams, but as a rule the milk was seldom weighed, but taken by a measure, which was calculated to weigh 18 grams. Milk was heavier than water in a ratio of 1.032 to 1. The first important step was to obtain a sample that was a true representation of the bulk of the milk. That was more easily done when the milk was fresh, because after it had stood for some time the butterfat rose to the surface. With fresh, warm milk all that was required in order to secure a proper sample was to take two bottles, transferring the milk from one to the other about three times, so as to thoroughly mix the contents, and then immediately take the sample for testing. If, however, the milk was, say, 24 hours old, but not sour, it would be necessary to heat the milk slowly in order to bring it above the melting point of butterfat. For that purpose the milk should be heated to a temperature of 98deg. Fahr.; the milk should then be mixed as already explained, and care taken that it did not churn while the sample was being mixed. Having obtained the sample, it should be carefully transferred into a clean milk flask. The method of transferring the sample, though extremely simple, should be done carefully, as it was easy to make an error. In transferring the sample from the pipette to the flask it was advisable to hold the pipette at about an angle of 60deg. The temperature of the milk was a point that required a little attention, especially in the sample of milk that had been heated. It was better that the sample should be somewhat light, rather than allow the milk to become too cool before taking the sample, because the butterfat might not be thoroughly mixed with the milk serum. Mr. Forrester then gave a practical demonstration of milk testing with a Babcock tester.

**DISEASES AND INJURIES OF THE FEET OF THE HORSE.**—The following paper was read by a member:—Lameness may be best detected at a slow trot when the horse is not excited, and it should be led straight away from and back towards the person examining it. When any horse is lame, it takes as much weight as possible off the injured limb, and places it on the opposite one. The extra weight placed on the sound side gives an uneven appearance to the action; if lame of a foreleg the horse will be seen to "bob" its head when trotting every time the sound foot comes on the ground. If lame behind, you will see that the hock of the sound leg rings higher and dips lower than that of the lame one when the horse is trotting away from you. In each case the bobbing of the head and the dipping of the hock is caused by the extra weight placed on the sound side. Horses lame of both fore or both hind legs take short strides, and "potter" along instead of striding out, and are most difficult to detect when the lameness is not severe. Any horse very lame on one foreleg appears to be lame on the diagonal hind leg also, and this appearance is deceptive to the beginner, and practice alone will enable anyone to recognise it. In horses, the majority of cases of lameness occur at or below the knee and hock. Lameness in the shoulder and hip are comparatively rare; the

foot is the most common seat. In all cases where no apparent and sufficient cause can be detected, the foot should be thoroughly examined, and the case regarded as foot lameness until the cause is discovered. *The Wall*.—This is the crust or horny sheet encasing the end of the foot in the front and on the sides, from the coronet to the ground. It is through the wall that the nails are driven, and the shoe rests upon the wall. In front it is thicker, toward the quarter and heels it is thinner; but it has the same thickness from the coronet to the ground edge. The white-colored wall is the poorer, while the iron-colored wall, when healthy, is the stronger. The growth of the wall is about 3 in. a year in a healthy foot on a young horse, but on an old horse and an unhealthy foot the growth is less. The wall is fibrous, the fibres running parallel from the coronet to the ground. The coronet is the name of the upper margin of the hoof, or the place where the hair ceases and the hoof begins. The quarters are the point of the wall about one-third the distance from the heel to the toe. The horny walls on each side of the frog are called the bars or braces. These commence at the heels of the walls, and extend towards the point of the frog. The bars serve as a brace to hold the foot in shape and prevent the wall from contracting. The frog is a spongy and elastic cushion, situated between the bars at the heel of the foot. This body is fibrous and soft when healthy. Its office is to take up jars, spread the foot, and give it a solid grip and foot-hold. This body is an important part of the foot. The bottom of the foot is called the sole. The sole is horny, but soft and more fibrous than the wall. It is thickest at the borders where it connects with the wall. In a healthy condition it scales off in cakes. These cakes should be a guide to the paring of the feet. There are feet that have no scales to go by, and the smith must use his own judgment. In such cases, it is only necessary to remove the loose scales and level the walls. Nature will govern the paring. The same thing can be said of the frog. Bruises to the sole are not common when the horn of the sole is left uncut, as it is usually sufficiently thick to protect the sensitive part effectively; they may, however, occur in stony ground, and when the horse is heavily loaded. They may be detected by pain on pressure over the injury, and by a red stain on the horn caused by the blood from the bruised fleshy sole soaking through. A leather sole nailed in beneath the shoe is usually sufficient to give relief, and it is important not to pare the sole, but allow it to grow its full thickness. Corns are bruises to the fleshy sole at the angle of the feet between the wall and the bar. They are caused by any undue pressure on this part, and both low flat-heeled feet and narrow high-heeled ones are liable to them. Short or narrow-heeled shoes which do not take a fair bearing in the wall and bar, or the wearing of shoes for too long a time without removing, so that they are carried forward by the growth of the foot and become short, are all frequent causes of this injury. Treatment of corns should, in the first instance, be directed to the removal of the pressure, whatever may be its causes. In slight cases removal of a small portion of the bruised horn and scaling of the heel of the shoe may be found sufficient, but the more serious require poulticing or soaking in hot water, and where the bruise has been so severe that matter has gathered in the heel (festering corn), that must be given a free exit, and subsequently treated antiseptically. A broad bearing shoe, with the heel well seated, or a three-quarter shoe, are the most serviceable for such cases. Splints are long growths in the cannon bones of horses, chiefly in the inside of the foreleg, but they may occur on the outside. They lame, as a rule, only whilst they are growing, and become callous as they get older. In horses which work slowly they are not a common cause of lameness, and they do not usually cause trouble in horses over six years old. Thrush is an inflammation of the fleshy frog, which results in a stinking discharge from the cleft. It is caused by dirt, wet, and neglect, and is particularly liable to occur in shod horses whose frogs are not on the ground or are cut about, and, when severe, may cause lameness. The cleft of the frog should be thoroughly cleaned, and a dressing of boracic powder, applied dry, will stop the discharge. When severe, the foot should be poulticed or soaked in hot water, being thoroughly cleaned before the dressing is applied. Cleanliness, dryness, and the frog pressure are the points which demand particular attention. Contraction is not in itself an original disease; it is in most cases the result of other diseases and of artificial living. Before the colt is used for work and shod, his hoofs are large and open heeled, the quarters are spread out wide, and the foot on the bottom is like a saucer. The reason for this is found in the fact that the colt has been running on the green



and moist turf without shoes, and the feet have, in walking in mud and dampness, gathered so much moisture that they have spread out. This is changed when the colt is taken out of pasture, put on hard roads, and housed in a stable with hard and dry floors, where the feet become hard and dried up; contraction also follows sprains of the tendons, corns, foundere, and navicular disease. When contraction is found in any one of the feet, it is generally the result of a disease in the foot, because the horse will stand on the healthy foot, which receives more pressure, and is opened out, while the diseased foot is dried up and contracted; in such cases the feet become uneven and do not look like mates. No man can understand the suffering of a horse when his feet are hoof bound, and pressed together as if they were in a vice. The pain from a pair of tight and hard boots on a man is nothing compared to the agony endured by this noble animal and silent sufferer. Contraction seldom, if ever, affects the hind feet. This fact should be suggestive. Why do not the hind feet become contracted? Because they receive more moisture, and consequently do not dry up and become as hard as the front feet. From this fact we may conclude that there is no such a thing as shoeing to cure contraction; still, if the horse must be shod in order to work, the shoeing should be done in such a manner as not to increase, but, on the contrary, to alleviate the trouble. Some horses are predisposed to contraction. A high heel, perpendicular in growth, sometimes narrower at the ground surface than at the coronet, is predisposed to contraction. Cracked heels and mud fever occur in the horse from the skin of the heel being "chapped." The surface is hot and painful, and a greasy discharge exudes from it (greasy heels). When severe, the horse is frequently very lame, especially first thing in the morning. The causes are washing and not thoroughly drying the legs, and sometimes constant standing in wet, sloppy stables, in which cases sores may frequently be found on the bulbs of the heels. Treatment.—Thoroughly clean and dry the skin. If the greasy discharge is abundant, poultice with dry bran, apply boric powder or boric vaseline, or any other non-irritating antiseptic, and put on a pad of tow with a light bandage. Give exercise regularly to keep the skin supple whilst the cracks are healing. These injuries are preventable in the great majority of cases. Lampas is inflammation of the gum behind the incisor teeth of the upper jaw of the horse. It is seen only in young horses when changing their teeth, and does not occur among adults. It may be noted that the horse's palate immediately behind the upper incisor teeth is often below the level of them, and this is frequently mistaken for lampas. When it does occur, it is from food working up between the teeth, and the removal of this and soft feeding is all that is necessary. Worms in the bowels are very common in horses, and when in excessive numbers may cause loss of condition. Green food aid in their expulsion; and turpentine, loz., together with a dose of oil, may be given. For the small round worms found in the rectum of horses, an injection of salt, 4oz. in a bucket of warm water, will be found useful. Constipation is due to want of sufficient activity of the bowels, and is to be avoided as being a contributory factor to indigestion and colic. Change of food, cooked or wet, feeds of green fodder, and enemas will overcome it, and if these prove insufficient, small doses of physic may be given. Strangles is a fever of young horses, the prominent feature of which is an abscess which develops between the branches of the lower jaw; there is also fever, and in many cases the horse may be off its feed and get thin. It is contagious, but large outbreaks are chiefly confined to remount depots. The disease is a serious one, and occasions severe animal losses. It is closely associated with one form of pneumonia. Symptoms:—Fever and swelling beneath the jaw. This swelling is at first hard and diffuse, but within a few days it becomes prominent in the centre between the jaws, and gets soft at the point; it then bursts, and generally heals rapidly. Treatment:—Feed the horse well and pay attention to the state of the bowels, keeping them soft. When the abscess has burst or been opened, the discharge must be destroyed, as the disease is contagious, and its prevention is the main point to be attended to. The general rules for dealing with contagious diseases and wounds apply. Ringworm usually takes the form of round bald patches covered with greyish scales about the size of a florin, common in all animals, and caused by a fungus growing at the root of the hairs. It is contagious, but not always serious. Clip off the hair around the patches, and dress with iodine (tincture or ointment), both over and around the spot. Drenching.—Use a small horn or bottle with a leather-covered neck. Raise the head by placing the loop of a

twitch in the mouth as a support (not on the lip), and do not pour down more than the horse can swallow at a time. If the horse coughs, lower the head immediately. **Balling.**—To administer a ball, take the tongue in the left hand, but do not pull on it violently; turn it upwards so that it opens the mouth, and push the ball as far as possible over the root of the tongue. Stand at the side, and not straight in front of the horse, and do the whole thing quietly and quickly as possible. After delivering the ball watch the left side of the neck to see it swallowed, and if the horse does not swallow quickly give a mouthful of water or green stuff to induce it to do so. **Antiseptics.**—An antiseptic is an agent which either kills germs or prevents them from growing in wounds. Many are known, and, although some may be preferred to others for special purposes, it is not as a rule of so much importance which particular one is used as that it should be thoroughly and intelligently employed. In their application it should be remembered that some of them are irritating substances, and when used in too strong a solution burn the wounds and retard their rapid healing. They should, therefore, always be employed as weak as is consistent with efficiency. Carbolic acid must be applied frequently, as it evaporates quickly. Sulphate of zinc is useful to apply to wounds which are not looking quite healthy, and restores their color and tone. Weak solution (1-100) of phenyle, creodol, cyllin, and sheep dip can also be used when obtainable, and are excellent antiseptics.

A further meeting held on June 1st was devoted to a discussion on various phases of agricultural work.

On June 8th a paper, "The Digestive Tract of the Horse and Remedies for Colic" was read by the Chairman (Mr. C. W. Hynes).

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RENMARK (Average annual rainfall, 10.93in.).

May 19.—Present: 19 members.

**LIME AND GYPSUM.**—The following paper was read by Mr. F. L. McDougall:—  
 “Lime and gypsum are not manures or fertilisers in the ordinary sense of the terms. Except in soils so deficient in lime as to be unable to supply the modest direct calcium requirements of plants, they do not directly add to the soil any fresh plant food. Their importance can, however, hardly be overrated, for in both a chemical and physical sense they are soil improvers. Lime and gypsum are both compounds of calcium. Lime, strictly speaking, means calcium oxide, produced by burning calcium carbonate (limestone, marble, chalk, &c.) at a red heat, at which temperature carbonic acid is driven off and the oxide of lime remains. Slaked lime is just the oxide plus water, thus called calcium hydrate, and if slaked lime is exposed to the air it absorbs carbonic acid, and slowly reverts to calcium carbonate. No matter in what form lime is added to the soil it rapidly becomes carbonate, and the advantage of using lime over ground limestone is chiefly that the state of division is finer in the chemically formed substance. Gypsum is calcium sulphate, a compound of lime, sulphur, and oxygen. There is one important chemical difference between lime and gypsum. Lime, whether slaked or as the carbonate, is a base or alkaline, and able to neutralise acids, while gypsum is a neutral salt and unable to affect acids. In order to understand the action of lime and gypsum it is first necessary to consider some conditions of the soil itself. Soil fertility depends first upon the soil containing a sufficient quantity of the essential plant foods (potash, lime, phosphoric acid, nitrogen, &c.), and secondly upon its physical condition, for it is only under favorable physical conditions that a soil can render its plant foods, its soil air, and soil water available for plants. No soil is an inert mass; in it changes are occurring all the time, and the better the physical condition of the soil the more rapidly the chemical and bacteriological changes occur. Very few soils, save coarse sands, are actually deficient in plant foods, and so from a practical standpoint the physical condition of the soil is of more importance than its chemical content. The farmer can add fertilisers to secure a supply of the lacking chemical, but it will be money thrown away unless the physical condition is such that the plant food can be made available for the plants. The physical properties we want to find in a soil are porosity, that is, that its particles should be full of fine pores like a sponge; capillary power, capacity for water, ease of working, &c., in fact, the qualities of the good rich loam, which every nursery catalogue recommends us to plant in. Our soils, of course, vary greatly in their physical condition. Sandy soils allow water to penetrate easily, but they are too coarse grained to be porous or to have good capillary power, and thus have little capacity for holding water, while heavy soils are too close grained, and while their capillary power is high, they are not porous, and frequently only allow water to penetrate slowly and with difficulty. The physical effects of lime and gypsum upon soils is to loosen heavy soils and to compact sandy soils. Their action upon heavy soils is much more marked and of the greater practical importance. A soil is heavy because its particles are so fine, that they set together in a hard and often impenetrable crust when dry, while they puddle and stick when wet. Both lime and gypsum improve this condition by a process known as flocculation. They cause the finest particles of the clay to come together as small porous flocs, and at the Woburn Experimental Farm it was found that a flocculated clay occupied double or treble the space it needed before flocculation. This is sufficient reason to account for the beneficent physical effect of lime and gypsum on a heavy soil. They make it less fine, and at the same time porous, and thereby render it easier to work and increase its power to take in water. On sands lime acts in the same way as it does when mixed with sand in mortar. The slaked lime forms carbonate on exposure to the air, and cements the particles of sand together. In the case of mortar, one part of lime acts on four or five parts of sand, while in the soil one part of lime may have 20,000 parts of sand to affect. The effect on a sandy soil is to make it more cohesive and to improve its capillary power, and thus increase its power of retaining water. It is claimed that gypsum also makes sands firmer and better. So far as I can gather, gypsum would have no such action as lime on sand itself. All our sandy soils, however, contain a percentage of clay, and gypsum would flocculate the clay, probably causing sand particles to adhere to the clay flocs, and thus

increasing its porosity. Lime would, of course, also flocculate the clay, and, so far as I can see, if it is desired to improve the physical condition of too sandy a soil, lime should certainly be used in preference to gypsum, even at a considerably higher cost. As to whether lime or gypsum is the better to use to improve a heavy soil, opinions differ. Professor Perkins definitely prefers lime; Mr. Lyon, gypsum, at any rate, for new land. No doubt some members present will have experience with both materials, and will be able to give their views. Our firm last spring tried lime as compared to gypsum on fairly heavy soil in two blocks. So far we have not been able to see any superiority of one over the other. Renmark is blessed with cheap gypsum, whereas in most parts of the world, lime or ground limestone is cheaper than gypsum. My own view is that until we have a definite proof of the superiority of lime, we should stick to gypsum for improving the working condition of our heavy soils.

*Release of Plant Foods.*—In soils that are very poor in lime, both lime and gypsum add the necessary calcium to the soil, but their most important chemical effect is in rendering available potash and phosphoric acid. Both these essential plant foods occur in the soil in unavailable forms, and probably a good deal of the excess phosphates we add in fertilisers form insoluble compounds with iron and alumina, and are thus temporarily lost to the plants. Lime attacks these compounds and combines with the phosphoric acid itself, making it thus available to plants. So far as I know this power of releasing phosphates from insoluble combination is a property of lime alone. Both lime and gypsum act on the compound salts of potash, rendering them soluble and available to plants. (Gypsum's power of rendering soil potash soluble makes one wonder whether the heavy dressings of gypsum we give our blocks may result in loss of potash by leaching.) Gypsum has the power of fixing ammonia in stable manure, &c., by converting the fugitive ammonium carbonate into the stable sulphate. Lime, on the other hand, decomposes ammonia compounds, and draws off the ammonia as a gas. Gypsum, therefore, should be used to spread in stables or on heaps of manure. In addition to saving the ammonia it renders the smells less offensive and abates the flies.

*Action on Injurious Salts.*—In all arid or semi-arid irrigation districts of the world, salt troubles occur, due to the concentration in the soil of salts either harmful in themselves, such as sodium carbonate (black alkali), or harmful in large quantities—common salt, sodium sulphate, magnesium chloride, &c. (referred to in America as white alkali, but not alkaline like neutral salts). Gypsum has a very definite value in combating black alkali, converting the sodium to the less harmful sulphate. For the purpose of treating black alkali lands, lime cannot replace gypsum. We are luckily pretty free from troubles caused by sodium carbonate; our salts are mostly chlorides of soda and magnesium.

*Aids to Nitrification.*—Scientific research in recent years has established the enormously important fact that the supply of nitrogen in a form available to plants is due to bacteria. Plants can only use nitrogen when it is in the simple form of a nitrate. Since 1889 a whole series of bacteria have been discovered that act on nitrogenous materials, and convert them, step by step, into simple nitrates. These bacteria (called nitrococcus, nitrobacteri, and many other species) can be classified with three types:—1. Those that act upon the nitrogenous organic matter in the soil (humus) or organic nitrogenous manures, blood, &c. 2. Those that live in the tubercles on the roots of legumes (peas, beans, &c.), and fix atmospheric nitrogen. 3. Those that live in the soil and fix atmospheric nitrogen without the aid of any host plant. These bacteria are so vitally important to us that we ought to treat our soils in such a way as to give them the best environment for development. Beneficial soil bacteria require air, moisture, and humus to work properly. In other words they require the soil to be in the best possible physical condition. They also require an abundance of lime in some form (as carbonate or as gypsum), so that the nitrates they form can be fixed as lime nitrate, a soluble plant food. Even in the best of our soils occasional dressings of lime or gypsum are required to get the best conditions for bacterial action, and on stiff, heavy ground the benefits of lime and gypsum may be as much due to improved conditions for bacterial activity as to the improvement in working condition. We all know of blocks in Renmark that can safely be said to have been made fertile by gypsum. In this paper I have attempted to give some reasons why this is so. Owing to the availability of cheap gypsum, lime has been little used. Until we have demonstrated the superiority of lime we shall naturally continue to prefer gypsum on heavy soils. Lime is,

however, a most powerful liberator of plant foods. It has a more markedly beneficial action in improving bacterial conditions, and, chemically speaking, it is a stronger reagent than gypsum. I should therefore strongly recommend the use of lime on blocks that, in spite of a good general treatment, show signs of lack of fertility, and where the soil is of a sandy or sandy loam nature, lime will probably prove of more general value than gypsum, even in spite of its expense. A ton of lime to the acre is regarded as a good dressing. Quick lime may be allowed to become air slaked in heaps on the ground, and, when crumbled, spread with a shovel. One necessary warning as regards lime. There is an old German proverb: 'Lime makes the father rich and the son poor.' Heavy dressings of lime cause a rapid increase in fertility at the expense of the humus and the plant foods in the soil, and it would be disastrous to apply lime yearly in the way we use gypsum. Lime used occasionally and followed by a green manure will probably, greatly benefit our soils."

Mr. McDougall then read replies to questions that he had submitted to the Director of Agriculture (Professor A. J. Perkins) and Mr. Lyons (of the Merbein Experimental Farm), and an interesting discussion followed.

#### ROSY PINE.

May 25th.—Present: seven members and visitors.

IMPROVEMENT OF FARM STOCK.—In a paper dealing with this subject, Mr. R. Marcus first made reference to the important place that the horse occupied on the majority of farms. The aims of the farmer should be the breeding of a horse adapted to the work, and at the same time an animal that would have a ready sale if placed on the market. In all cases the sire should be chosen to suit the mares. If one had a long, high, and raky mare, a short and thick-set sire should be selected for her mate, so that the progeny of that mating would be a decided improvement on the mare. He was sorry to say that there was a general tendency on the part of many farmers to secure the services of the sire whose fees were the cheapest, saying, "His foals will work just as well as any others," but if that practice was carried out they could not expect to have a good type of horse on the farm. Cows.—On many farms cows held a very prominent place, for besides providing butter and milk for the household, they were the means of adding to the general income of the holding. Different farmers favored different breeds of cattle, but the main point to bear in mind was that whatever breed was selected, an endeavor should be made to secure animals true to type. If one was not fortunate in having pure-bred stock at the outset, the standard of the herd could be raised by using pure-bred sires. He preferred the Jersey for that district. Sheep.—Sheep were a most essential factor in the successful growing of wheat. They assisted in keeping the fallow clean, provided meat for the household, and greatly increased the revenue of the farm. The main points in breeding sheep for a mixed farm were a sound constitutioned sheep with a good frame, and one carrying a fleece that would command a good price. If one resided in a wet, marshy district, the English breeds should be chosen, but there was no doubt that the Merino met the requirements of most farmers. Pigs.—As many farmers did not breed a large number of pigs, the speaker thought a quick-growing and early maturing pig should be selected. With these animals, the same as with all other classes of farm stock, the producer should endeavor to obtain the use of a pure-bred sire.

BARMERA, May 20th.—An interesting evening was spent in discussing questions that were to be submitted at the forthcoming Conference of River Murray Branches.

BERRI, May 30th.—Professor Osborn (Professor of Botany) attended the meeting, and delivered a lecture, "Downy Mildew of the Vine."

GLOSSOP, May 18th.—Mr. Hatch read a paper, "Sanitation." Mr. James described the septic tank and grease trap he had installed on his block, and offered to help any who intended putting in sanitary conveniences.

**LAMEROO, May 21st.**—Mr. L. Orwell read an extract, "The Benefits of Dry Pickling of Wheat as compared with Wet Pickling, for the Prevention of Bunt or Smut." An interesting discussion followed.

**LONE GUM, May 18th.**—The Manager of the Berri Experimental Orchard (Mr. C. G. Savage) attended the meeting, and read a paper, "Winter Cultivation." An interesting discussion followed, and Mr. Savage replied to numerous questions.

**LONE GUM.**—The following is the programme of meetings compiled by the above Branch for the year ending December, 1921:—July 20th, "Cotton Growing," Mr. H. S. Taylor; August 17th, "Care of Horses," Mr. Halliday; September 14th, "Diseases of the Vine," Mr. C. G. Savage; October 12th, "Pruning, Training, and Cineturing," Mr. Alexander; November 9th, "Soepage and Underground Drainage," Mr. W. F. Muspratt; December 14th, Question Box, Mr. H. S. Taylor and Mr. H. Berriman. Meetings held Wednesday on or before full moon.

**MCOROOK, May 24th.**—Mr. H. Carne read a paper, "Manures and Their Value." A very interesting discussion followed.

**PINNAROO, May 28th.**—A paper, "The Balanced Ration," was read by Mr. B. L. Harfield. A lengthy discussion followed. Considerable time was devoted to a discussion on the local experimental plots. It was decided to carry on the working of the plots for at least one more year.

## SOUTH AND HILLS DISTRICT.

### ALDINGA.

April 23rd.

**THE AGRICULTURAL BUREAU.**—In the course of a paper under the heading, "The Agricultural Bureau and How Best to Improve Our Meetings," the Hon. Secretary (Mr. W. R. Pengilly) said he took the Bureau to be what the school was to the children—a place where knowledge could be gained. Every encouragement should be given to non-members to attend, especially those who derived their livelihood from the soil. He believed it would be a good plan if each member endeavored to bring a friend along and give him an insight into the work that was done by the Bureau. In their efforts to learn better methods of soil cultivation they would not only benefit themselves, but the whole of the country. The Departmental Agricultural Experts were also brought into touch with the producers, and the Agricultural Bureau was largely responsible for the adoption of many of the up-to-date and scientific methods of farming now practised. He complimented the settlers in the newly opened districts on their foresight in opening up a Branch in those districts, and it was most pleasing to know that in many instances the majority of the members were young men. He wished that young men in the older settled districts would take as keen an interest in the work on the land. Anyone who became a member of the Branch should join with the intention of doing something to improve that Branch. It was a pity that some members thought it was a waste of time attending the meetings of the Bureau, but if they were to attend regularly and take a live interest in the work they might find that some of the other members had mastered a difficulty that they themselves had been trying to overcome. Punctuality and regularity of attendance should be strictly observed by all members. He realised that during the busy seasons of the year it was very often impossible for members to attend the meetings, but during the other portions of the year he thought members could devote one night a month to the Bureau. The Secretary should be energetic and endeavor to arrange for a paper to be read at each meeting. When a Secretary asked a member to write a paper he was sometimes told, "I am not capable of writing a paper." That, in his opinion, was "all nonsense," for he considered that every man on the land could write a practical paper of interest to other members. Even if the

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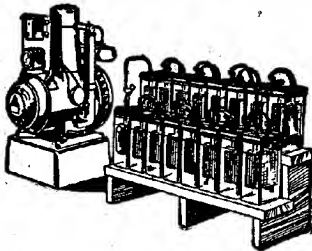
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JOHN BABKER.

E. V. DAY.  
W. A. CLUTTERBUCK.  
E. ALLNUTT.

Pastoral and Agricultural Inspector ..  
Manager .. . . .

CHARLES GRIFF.  
E. W. WILLIAMSON.

22, GRENFELL STREET - - ADELAIDE

paper that was contributed was a short one, it would more than likely provoke a good discussion. The person joining the Bureau should realise that membership carried responsibilities as well as privileges, and should attend the meetings prepared to impart knowledge to other members.

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#### ASHBOURNE.

May 24th.—Present: 12 members and visitors.

**PIGS ON THE DAIRY FARM.**—“I am of the opinion that the keeping of pigs on the dairy farm is the only method by which the highest price can be received for the skim milk,” said Mr. H. B. Kirkham, in a paper under the above heading. He admitted that it was a good policy to keep heifers from the best cows, but, even so, that should not prevent the dairyman from keeping pigs, and thus provide a means of disposing of the surplus milk. The care and attention of fattening the animals was a point not usually seriously considered by the producer. If the pigs were housed and fed under proper and sanitary conditions, they would keep themselves thoroughly clean. The pigs selected for fattening should be as near the same size and weight as possible. In referring to the best foods, the speaker said crushed wheat, with a little pollard and milk, was an excellent food for winter feeding, but it was too heating to be used during the summer. Another food that he had used with much success was boiled English barley mixed with hot milk and pollard. A dark sty, with provision made for plenty of ventilation and not too much room for the animals in which to run about, was also essential for fattening the animals rapidly. The Berkshire-Essex cross was a breed that fattened quickly on a small consumption of food. Quite recently he had trucked 23 pigs of the breed to the market, and they had brought £9 4s. per head at five months and five days old. He thought it paid best to grow the feed rather than breed the pigs, but if one had proper facilities for breeding there was no doubt that it was a paying proposition. Mr. Kirkham then gave an interesting account of marketing, and the cost of curing bacon. The paper aroused a lively discussion.

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#### BLACKWOOD (Average annual rainfall, 27in. to 29in.).

May 16th.—Present: eight members.

**PRUNING.**—Mr. Grasby contributed a paper on this subject. The object of pruning was, he said, (1) to increase the size and quality of the fruit, (2) to secure regular crops over a long period, and (3) to guard against unfavorable climatic conditions. The methods adopted should be varied to suit the climatic and soil conditions. Pruners should understand thoroughly the importance of gauging the quantity of fruit that could be borne by a tree, the ability of the tree in that respect being measured by the rate of growth, variety, soil, and the climatic conditions. The Sturmer apple needed very little shaping and encouraging, but it was inclined to produce too many spurs. The Rome Beauty was just the reverse. One important point which required consideration was the shaping of a young tree. The young tree could be more easily trained to grow in the desired direction than an old tree. He advocated the inverted conical shape to suit their climatic conditions. It had the advantage of admitting a greater surface to the light and air. When planting the young tree, the strongest leader should face towards the prevailing wind. When the tree was pruned the following year it should have six leaders, and they should be so trained that they would carry a heavy crop without affecting the formation of the tree to any great extent; there would then be no occasion to support the leaders, and they would be better able to withstand strong winds. A successful way to open trees that had a natural tendency to grow upright was to cut to the inner bud, and during the summer cut the inner leader back; by so doing the growth would be forced to the outer leader. That process could be repeated during the following years. An important factor was the admission of heat and light. Some people believed in having their trees dense, but that was not necessary; one could still have the conical shape, providing the



upper surface laterals were placed in such a way as to give the necessary shade to the fruit. Experience had shown that if the trees were dense, an inferior class of fruit, both in color and quality, would be secured from the lower portion of the tree. Good fruit developed on good bearing wood, but in the case of some fruits bearing wood was new wood, and the reduction of old wood should be constantly in mind for the purpose of forcing new growth. The size of the fruit, providing it was healthy and vigorous, depended on the amount of bearing wood the tree was allowed to carry. Particular attention should be given to cutting to a bud, for it was important to sever the shoot at a distance from a bud which gave it the best chance to grow well, and at the same time facilitate the healing of the scar. Cutting too far from the bud would leave a stub, which died back, and cutting too close to a bud would make a weak shoot. Summer pruning, to reduce bearing wood was rarely practised, on account of the growers being occupied with packing and storing, but he was of the opinion that summer pruning was essential to most young trees that had a habit of producing bare wood.

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HARTLEY (Average annual rainfall, 15in. to 16in.).

May 18th.—Present: 11 members and visitors.

SAND DRIFTS.—In the course of a short paper dealing with this subject, Mr. B. Wundersitz said that most sand drifts could be prevented or stopped if the following methods were carried out:—“Immediately after a good autumn rain, and while the soil is still warm, start on the side from which the worst gales come, generally the north-west side. Run the seed drill from north to south or north-east to south-east, using a liberal dressing of superphosphate, and some quick-growing wheat, oats, barley, or rye. Do not use the harrows. If the area to be covered is large, I would not advise going over the whole of it the first year, because if a big blow should come within a week of the drilling, the work may have to be repeated, but usually during autumn the gales are not so frequent. If the weather remains calm for 10 days or a fortnight, the sand will be safely covered. After harvest, do not stock with sheep; only allow horses or cattle in the paddock. Sand drifts are ruining many of the roads in the State, and the Government should take steps to remedy the evil. On nearly all farms will be found some portion of the land too sandy for safe fallowing. On this land I would sow from 2lbs. to 4lbs. of lucerne seed with the wheat or oat crop. Mix the lucerne seed with the super, and sow the cereal rather thinly and shallow, thus giving the lucerne a better chance. This procedure will provide excellent grazing if the stock are not allowed to remain on it too long; if this is done the lucerne will soon be eaten out. This method I have tried on 35 acres of very sandy land, and it has proved a decided success.”

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LONGWOOD (Average annual rainfall, 37in. to 38in.). . .

May 21st.—Present: 10 members.

THE FEEDING AND CARE OF ANIMALS.—The meeting was held at Mr. W. Nicholls' residence. Mr. H. Gurr, who read a paper dealing with this subject, said every careful farmer and stockman should study the economic feeding of animals, and no guess work should be permitted in the stall or field in the rationing of the stock. The speaker believed it was a good plan to ascertain the weight of food that the various receptacles held that were used for feeding the stock. The feeding troughs should always be kept in good repair, and no stale food left in the mangers. Steps should be taken to prevent the horses from turning around in their stalls and spoiling the food. A piece of rock salt or salt lick should also be kept in the mangers. One of the most essential points in animal husbandry was that the stockman should have the confidence of his charges, and that could only be obtained by treating the animals kindly. Regularity in feeding and quietness were most desirable in cases where stock were being fattened, for it allowed them to assimilate the best properties of the food, and was most necessary for early maturity. Another important point was the careful observation

of the animals; and as a layman one should not presume too far with the doctoring of the stock, but call in the services of a veterinary surgeon. If at any time an animal did not eat all of its food it could generally be accepted that the beast was not in the best of health, and care should be bestowed on it until its normal appetite was re-established. It was of the utmost importance that the stockman should be able to quickly detect any illness among his charges. After the business of the Branch had been transacted the members and visitors spent an interesting and instructive time examining a mineral deposit on Mr. Nicholls' property. The machinery, plant, crude clay, and manufactured articles, consisting of calomine, Fuller's earth, toilet powders, washing blue, &c., were also inspected. The officers for the forthcoming year were elected, and the Hon. Secretary (Mr. J. R. Coles) presented the annual report.

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#### MEADOWS (Average annual rainfall, 35.52in.).

May 18th.—Present: 10 members.

**FARM MANAGEMENT.**—In the course of a paper under the title, "Time and Money Lost on the Farm," Mr. W. Griggs said it frequently happened that when two men were working a farm on shares, they lost a good deal of time by not outlining a system under which their work could be carried out. It was a bad practice for the two men to be engaged on the same work when one man could effectively perform the undertaking. The speaker was of the opinion that valuable time was lost when the farmer did not have proper gates for his paddocks and stock enclosures. Again, it was false economy to use sires of an inferior type for the breeding of stock. Every farmer should be willing and prepared to take advice from his neighbor; for it was a fallacy to believe that because one had been doing a certain work in a particular way that that was the cheapest and best method of performing the work. A small outlay in the purchase of a set of handy tools would be money well spent, for there were many jobs that the farmer, with a little practice, would be able to perform, and thus save the time and money that would be incurred if the work had to be taken into the township. Mr. Ellis gave an interesting account of a trip he had taken along the River Murray.

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#### MOUNT PLEASANT (Average annual rainfall, 26.87in.).

March 11th.—Present: nine members and visitors.

**ARTIFICIAL MANURES.**—In the course of a paper, under the heading, "Are Artificial Manures Beneficial to Crops in Our District," Mr. F. Langford said three important points of the question were worthy of consideration:—(1) Kind of manure, (2) the preparation of the soil, (3) the application of the manure. Referring to the first point, the speaker believed that bone manure was one of the best manures for their district, because the soil was so deficient in lime. Bone manure was not very soluble in water, and as a consequence it could not be converted into a liquid form quickly enough to benefit cereal crops, but it was beneficial to the growth of plant life for a long period. On that account it would help the crops at a later stage of growth, and assist the second crop or the grass for pasturing. As the manure was not very soluble in water, it was necessary to mix a manure with it that was more soluble, and thereby benefit the crops. Superphosphate was more soluble in water, and he suggested the addition of that manure; lewt. of each manure to the acre he considered a fair dressing for the soils of their district. **Preparation of the Soil.**—Land in that district should be fallowed with the idea of destroying the weeds, and enabling one to get the crop in early in the season. With an application of artificial manure the crop "comes away quickly," and the plants made a strong growth, which assisted them in withstanding the cold and wet weather. The ploughing should be done early in the spring, at a depth not greater than 4in. Cultivation should be performed through the summer to keep the weeds in check, and bring the soil to a fine tilth. **Application of Manure.**—It was his opinion that manures had failed because both the seed and the manure had been sown too deeply. Their district was a wet one, and the general practice was to plough up the land, and sow the seed. The ground was usually in a very boggy condition, and the hoes of the drill worked right at

the bottom of the ploughing. When the work was done under such circumstances it was impossible to place the seed at the right depth, which was about 2in. The result was that not half of the seeds germinated.

#### MOUNT PLEASANT (Average annual rainfall, 26.87in.).

May 13th.—Present: seven members.

FARMYARD MANURE.—Mr. H. A. Giles, who contributed a short paper on this subject, considered it would be a good plan if a dam was excavated in a place convenient to the stables, where the manure from the horses, cows, pigs, and fowls could be stored. In January the contents of the dam should be thoroughly turned over in order to ensure the rotting of the manure. During the month of April, the fertiliser could be carted on to a piece of land that one intended for early cultivation for the growing of fodder or other crops. The careful and regular removal of all manure to the pit would not only keep the farm premises clean, but would form a valuable fertiliser for applying to the soil. In the discussion that followed, the majority of members were of the opinion that as labor was so expensive it would hardly be worth while treating the manure in the manner suggested by Mr. Giles. Mr. Maxwell said that stable manure, when carted straight from the stable and spread out over the land, gave a profitable return, even when the question of labor had been considered.

#### MOUNT PLEASANT.

June 10th.—Present: six members.

CARE OF CREAM.—Mr. V. R. Tapscott, who contributed a paper on this subject, outlined a few points that should be avoided if one wished to secure the best yields from the dairy. "Never run the cows into the yard; it will cause them to become

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overheated. The milk should be put through the separator as soon as possible after being taken from the cow. When a heavy yield of milk is being received from the cows during the winter months, it is necessary to warm the milk. This is best done by putting a large boiler on the fire and half filling it with water. When the water is hot the bucket of milk can be allowed to stand in the water for a few minutes and then put through the machine. All the milk and cream vessels should be kept scrupulously clean, special care being paid to all the parts of the separator. Avoid mixing warm and cold cream together. If it is done, fermentation is likely to occur. Stirring the cream once or twice a day is a great help towards keeping it sweet and fresh. A little salt sprinkled on the cream during the hot weather will greatly aid in preserving the product. If possible, all cream should be taken to the factory twice a week. If the cream has to be taken a long distance to the factory in the hot weather, it is a good plan to soak a corn-jack in water, and place it over the cream can. I strongly advise the weighing and testing of the product before sending it to the market. The testing can be carried out as follows:—Put all the cream into the can, stir it well, then take out from 2lbs. to 4lbs.; churn it to butter, wash it well, and then have it weighed. You will then know the exact amount of butter in the can."

#### PORT ELLIOT (Average annual rainfall, 20.33in.).

May 21st.—Present: 10 members.

POWER FOR THE FARM AND ORCHARD.—In the course of a paper dealing with this subject, Mr. W. Green traced the progress that had been made in mechanical appliances for assisting in the work of the farm. At the present time the oil and petrol engines for supplying power were most popular with agriculturists and horticulturists, and there was no doubt that many of the machines on the market did very satisfactory work when they were cared for in a proper manner. The main point to consider when purchasing a power plant was to endeavor to secure an engine simple in construction. For short runs of, say, an hour or two, he favored the petrol engine, but for continuous work, such as pumping and chaffcutting, he thought an oil engine was preferable. When purchasing it was a good plan to secure an engine of a higher power than that actually required, because after it had been running for some time, the valves would leak and the engine would fail to develop the full rated horsepower. It sometimes happened that the farmer required a portable plant, and from experience he had found that a portable engine lost at least one-third of its power in vibration. He considered that every up-to-date farm or orchard required a power plant to assist in the thorough working of the holding. The Hon. Secretary (Mr. H. B. Welch) also read a paper, "Tree Planting."

#### ROCKWOOD.

May 16th.—Present: 10 members and five visitors.

DAIRYING.—Mr. J. T. Speed, who read a paper on this subject, said dairying was a very important primary industry, and one which meant much to the State. Their locality was essentially a dairying one, for they were not always sure of a cereal crop, on account of the heavy rainfall and the sandy nature of the soil; but they could generally depend on an abundance of grass. It was also a cool district, and cows did very well if they were properly treated. A dozen cows should return a fairly good living, especially when pigs or poultry were used to consume the by-products. In ordinary seasons, and with butter at normal prices, a cow should average about 8s. a week, and her calf, if properly fattened, would bring from £3 to £4. Referring to the breeds of cattle, the speaker expressed a preference for the milking Shorthorns, with Friesians second, and Jerseys third. Some farmers favored Jerseys because of their rich cream, but there were other points to be taken into consideration. The Shorthorns and Friesians, as a rule, gave a great deal more milk than the Jerseys, and that had to be reckoned with when pigs were kept. A Shorthorn giving 3.5 to 4.0 test would produce more butter than a Jersey with a 5.0 test. According to the sales of pure-bred cattle for several years the Shorthorns and Friesians had brought higher prices and had been in greater

demand than Jerseys. One other point was the difference in the value of the calf of the Shorthorn and Jersey. Testing was an essential to successful dairying. The work should be done systematically to ensure success; regular times for milking and feeding, regular habits of dealing with the cows, and the exercise of quietness and tenderness in handling the animals. It had been said that cows did better with women, because they did not knock them about, and he believed that was true. Cleanliness in milking should be observed; the cows' teats washed with clean water, clean hands, and clean utensils. Carefulness with the separator and treatment of cream would go a long way towards making a good grade butter. The cow was a machine for making milk, but she could only give back what was allowed her to work on. Plenty of natural green feed would fill the bill for a certain time of the year, but when it lost its good qualities it should be assisted by artificial feeding. Green feed could be had in that district for at least nine months of the year. The natural grass was ready about August, and if a crop of Kangaroo rape was sown, the plants would start feeding off until Christmas. He had also been successful with Japanese millet. It would freshen with every summer rain, and should be planted early in September. A crop of Sudan grass would carry the stock into May or June. It could be cut and fed or grazed, but experience proved that best returns were obtained by cutting. He thought it would be a payable proposition for the members of the Bureau to hire a pure-bred bull for six months from the Government. In opening the discussion, Mr. A. Carter thought the Jersey was the best breed of dairy cattle. He thought cows should be fed on dry chaff, &c., in preference to damp food. A good way to prevent cows from choking was to put a handful of salt in the nosebag. Maize was a splendid food for keeping cows in milk, but unless it was chaffed a large portion was wasted. He did not think cattle watered at a spring or running water required salt licks. Mr. H. C. Dunn preferred the Jersey. He found that if well fed they were able to withstand cold weather. Big cattle were not as well able to climb about on hilly country. He favored damping chaff before feeding. Mr. H. Galpin had tried Shorthorns, Holsteins, and Jerseys, and expressed a preference for the latter. He considered clover the best milk-producing fodder, and did not think Sudan grass was suitable for grazing. Mr. H. C. Hodson had sown Sudan grass in October, and had continued to cut it up to the present time. He thought it would pay to put in several plots at short intervals. Mr. M. J. Myers also favored the Shorthorn, as they gave more milk, and were better able to withstand the cold weather.

#### SHOAL BAY.

May 24th.—Present: six members.

THE ADVANTAGES OF THE AGRICULTURAL BUREAU.—In a paper on this subject the Hon. Secretary (Mr. Geo. Barrett) said, unfortunately, some members of the Bureau thought all that was necessary to ensure the existence of the Branch was for them to attend an occasional meeting. Members should realise that if the Branch was to do the work for which it was inaugurated it was incumbent upon them to support the office holders in every possible way. One writer in the *Journal* had very aptly described the Bureau as "a Farmers' Mutual Improvement Society," and if the members were punctual in their attendance, and endeavored to secure other farmers in the district to become members, and contribute papers for discussion, the producers would derive much good and lasting benefit by attending the meetings. Again, to secure an expert to visit the Branch, members should realise that a good live branch was more likely to be successful in their efforts than one that had to depend on the outside public for support or assistance. The Agricultural Bureau was about the only form of co-operation amongst farmers which had found an extensive footing, and there was no better way of improving their knowledge than meeting together and discussing the most up-to-date methods of harvesting, marketing, and disposing of their products.

CHERRY GARDENS.—The following is the programme of meetings of the above Branch for the year ending December, 1921:—July 19th, "Explosives for Clearing Land," Mr. Jos. Potter; August 16th, "Bureau Work in South Australia," Mr. H. J. Finnis, Secretary Advisory Board of Agriculture; September

13th, "Prevention is Better than Cure," Mr. Hy. Jacobs; October 11th, "Early and Late Ploughing, Garden or Orchard," short papers, Messrs. Hy. Strange and I. L. Stone; November 15th, "How Best to Preserve Apples at Home," Mr. C. Lewis; December 13th, social evening.

**GUMERACHA.**—The following is the programme of meetings drawn up by the above Branch for the period ending April, 1922:—July, 1921, "Motor Transit v. Horse Power," Mr. B. Cornish; August, "Cultivation of Fodder Crops," Mr. F. M. Tee; September, "Overproduction," Mr. C. Jamieson; October, "Care of Machinery," Mr. A. W. Cornish; November, "Farm Buildings," Mr. V. A. Lee; December, "Summer Cultivation," Mr. G. R. Randell; January, 1922, "Drainage, &c.," Mr. W. B. Bond; February, "Educating the Farmer," Mr. H. A. Hanna; March, "Co-operation," Messrs. Cooper and Buckley; April, "How to Prevent the Rural Exodus," Mr. H. V. Cornish. Night of meeting, Monday nearest full moon.

**IRONBANK,** May 21st.—A discussion took place on the question of erecting a fruit-drying plant in the district, and Mr. Tucker was appointed to inquire into the matter.

**MACGILLIVRAY,** May 17th.—The monthly meeting of the Branch was held at Mr. J. Nicholl's residence when several matters, including the adjustment of draught on implements, were brought forward for discussion.

**SHOAL BAY,** June 16th.—Mr. Buck tabled a stool of Sudan grass, 3ft. 6in. high, 87 stems, as a sample of 10 acres sown last October, at the rate of 4lbs. of seed per acre. He had fed the plot off four times at the following heights:—First feeding at 15in., second at 2ft. 9in., third at 9in., and fourth at 6in. The crop now stands 2ft. 9in. high.

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## SOUTH-EAST DISTRICT.

KYBYBOLITE (Average annual rainfall, 22in.).

May 27th.

**METHODS OF CULTIVATION.**—In the course of a paper under the heading, "Methods of Cultivating the Soil in the Kybybolite District," Mr. G. H. Hahn said, except in a few selected spots, the soils of their district were not suitable for the cultivation of wheat. Most of the land set aside for cropping should be fallowed to a depth of 4 in. or 5 in., especially if new land was being worked, so that it would be exposed to the sun and air during the summer. The land that had been under crop for a number of years was in many cases badly infested with sorrel, but if it was cultivated or ploughed either before or after harvest much would be done towards destroying the weeds. When rain held off until the end of May, he would venture to put the seed in whilst the soil was in a dry condition. If there had been any summer rain there was, as a rule, sufficient moisture in well cultivated fallow to germinate the seed. By working the drill a notch deeper than the usual depth, he found that most of the seed made a start; the grain sown on the dry patches would germinate after the first rain had fallen. He had not received any measure of success through dry ploughing, excepting when oats were sown. He thought it was best to sow wheat on good fallow land, the next year drill in a crop of oats or barley. Cape barley was a crop which, he believed, would do well in that district, especially if it was put in after the other crops. It provided an excellent feed for pigs, cows, and sheep. It was his contention that their district was best suited for mixed farming practices, combining the growing of cereals and fodder crops with a small flock of good sheep. Cows, fowls, pigs, and a fruit and vegetable garden would assist in making the farm prosperous, and do much towards making the holding a comfortable home.

MOUNT GAMBIER (Average annual rainfall, 32in.)

May 14th.—Present: 15 members.

**FRUIT TREES ON THE FARM.**—Mr. H. H. Orchard (Orchard Inspector and Instructor for the South-East) read the following paper:—"My object in selecting this subject is to stimulate, if possible, a greater interest in the cultivation of fruit trees on the farm. I do not advocate planting extensively; that is best left to the commercial orchardist; my paper has reference only to what might be termed the home garden. Situated, as it should be, adjacent to or surrounding the home-stead, it materially enhances the value of the property, adds to the beauty of the surroundings, and also supplies a ready amount of fresh fruit. Many farm home-steads are surrounded with fruit trees, but in many instances the trees have been neglected. The initial outlay of money and labor has, to all intents and purposes, been lost through the subsequent neglect. The trees are left untended, limbs become elongated, making an unshapely and unsightly tree, the period of production is considerably lessened, and the fruit suffers accordingly in quality and quantity. The question is at once raised, 'Does not the cultivation of fruit trees on the farm interfere with the general work?' This is an erroneous idea. If systematically worked, the labor and time involved is not considerable, and is easily compensated for by the benefit and comfort derived by the household. The cultivation can be done conjointly with the farm cultivation without any inconvenience. The pruning does not interfere with other work during the winter time, and the amount of time spent in spraying is very small when the work is done efficiently. The gathering of the fruit is never considered a waste of time, yet in reality it is so when handling diseased and inferior produce. The monetary point of view should not bear any weight; the advantages are so obviously in favor of a home plantation. Fruit is always in demand, whether for jam making or preserving, or for consumption as fresh fruit. 'No knowledge of fruit growing' is another phrase sometimes heard. This should never be a stumbling block. Advice and assistance can always be readily obtained if sought after in the right quarter. The area of the home orchard should be from half an acre to one acre in extent. The larger area will allow of plenty of variety, and be quite large enough. The smaller area will not permit such a variety of fruit to be grown,

but will yield a good supply for home consumption. Land with a north-easterly aspect is desirable, and it must be well drained. If this is not possible by natural means, then artificial means should be resorted to. Avoid low-lying ground. Still, as the homestead is generally built on rising ground, this is hardly likely to occur. The initial preparation of the land selected must be very thorough. No half measures can be successful in the long run. The soil must be well stirred to a depth of 12in. at least, and when a hard subsoil exists, to a greater depth; the subsoil should not be brought to the surface. The ploughing can be done in April or May, and by cultivation kept free from weeds until July, when the young trees can be planted. Of course, cultivation should not cease then, but should be regularly done at intervals, or after each rain. Early planting in May has proved very successful in other parts of the State. The roots get a good start before the ground gets too cold, and then with the return of warmer conditions the trees go straight ahead. I have not had sufficient experience in the South-East to advocate May planting. The general impression favors July. The block must be securely fenced, and be both stock and rabbit proof. If the position is at all exposed, a breakwind is essential. In this connection a high paling fence might suit the purpose, but a breakwind of tagosaste, cypresses, or some quick-growing plant, which will afford the trees good shelter in the course of a few years, is desirable. Avoid any plant that is likely to act as a harbor for any pest or fungi that attacks fruit trees. The trees may be planted 20ft. apart on the septuple system. This system gives more trees to the acre than the square, with comparatively the same amount of root ground. Each tree comes midway between the two in the adjoining row, and each tree is the centre of six others. Sufficient space must be left between the trees and the breakwind to allow of cultivation and prevent the tree roots being robbed. See that the rows are straight, and the subsequent working will be easier, and the appearance of the orchard much improved. Pegs can be used to mark out the allotted places the trees are to occupy. With the ground well prepared, a large hole for planting is not required; 30in. square would be plenty. One spit, that is the depth of a spade, should be removed, and the next spit loosened, and a little bone dust or well-rotted farmyard manure mixed up with it. Never use a quick-acting manure. The earth is usually mounded up in the centre of the hole to enable the roots to be spread out evenly. The young trees require careful handling at planting time, and as far as practicable their roots should be kept moist until finally planted. Any decayed or broken portions must be cut off cleanly. Care must be taken to see that the roots are well spread out, and the soil gently, but firmly, placed around them. The tree when planted should be the same distance out of the ground as it was in the nursery. This can be recognised by the discoloration of the bark. The young trees will require pruning, but this need not be done immediately after planting. Left for some days they will not come to any harm. A planting board should always be used to obtain accurate results. This is quickly and cheaply made out of a piece of matchboard. Neat stakes, to which the young trees can be fastened, are an advantage, care being taken to see the tying material does not rub the bark or in any way damage the tree. A matter of importance is purchasing the trees. Make sure they come from a reliable source. Cheap trees are not always a profitable investment. Budded trees are preferable to grafted ones, and those with one year's growth from the bud only. Once planted, a good idea is to label each tree, and a plan of the plantation, in case the labels go astray, is advisable. No advantage can be gained by interplanting with vegetables or anything other than green manure crops. The vegetable garden should be quite distinct; if not, then irregular cultivation must result. Spraying is an operation that must be carefully and diligently attended to. Some knowledge of the life history of the pest or fungi with which one is dealing is desirable, so that operations can be carried out when they are most effective. Chewing or biting insects must be poisoned; sucking insects must be killed by contact; and fungoid pests by contact also. Pruning should be carried out each year, and particularly so the first few years, when the correct formation of the young tree is so important. The centre must be kept open to permit of sunlight entering (and yet not too open to permit of scorching of the bark), and the arms shortened back to an outside bud to insure a sturdy framework and continuous growth." In replying to a question regarding varieties to plant, Mr. Orchard said much depended on what kinds of trees were wanted. In apples he named Cleopatra, Jonathan, Hoover, Rome Beauty, and Rokewood. In pears he mentioned Williams' Bon Chretien, Vicar of Wingfield, and one or two



others. Mr. R. Smith asked if Mr. Orchard would recommend the Five-crown Pippin. Mr. Orchard said they did very well here, and at Coonawarra. Mr. H. McCormack said that around Mount Gambier there was no subsoil, and he asked if it would be a good idea to put a flagstone or something impervious underneath the young trees to prevent the roots going down into the gravelly stuff. Mr. Orchard said the roots would go where the water was. If they were too shallow the trees would suffer from cultivation and in warm weather. If they cultivated deeply and thoroughly the roots would not come up. Mr. Orchard was then plied with questions as to the best time to prune, the best sprays, &c. He said winter was the best time to prune. For curl leaf in peaches and shot hole in apricots, Bordeaux mixture was the best spray, and for codlin moth in apples, arsenate of lead.

#### MOUNT GAMBIER (Average annual rainfall, 32in.).

June 11th.—Present: 11 members.

BREAKWINDS.—“Many of us will remember,” said Mr. G. T. Gurry, in a paper on the subject, “Breakwinds on the Farm,” “when the country around Mount Gambier was a dense forest of native timber. As settlement advanced this gradually disappeared. The greater portion has, no doubt, fulfilled the purpose for which it was intended by Providence in providing building and fencing material, and for domestic purposes, but it is to be regretted that much valuable timber has been destroyed by fire. The country has become denuded of its natural cover, and the wind has free play from all points, and people have come to realise that they have gone from one extreme to another, as the conditions created by the cold, bleak winds of winter, and the dust storms of summer, are the reverse of pleasant, and it is imperative to provide for present-day needs. Hedges, and either clumps or rows of trees, would naturally suggest themselves, and whilst a hard and fast rule would not apply as to which varieties to plant, or modes or methods of planting, these being matters which can be determined individually, I feel that perhaps a few general observations will not be out of place. For hedges, boobialla and tagosaste, or tree lucerne, has several advantages, being quick growers, and although requiring a considerable amount of cutting back, the waste can be fed to stock. During some of the recent severe seasons I have heard more than one person loud in praise of them, and express a wish that they had a few more hedges to prune. Both of these plants make splendid breaks around a fruit or vegetable garden. The spreading cypress makes a perfect hedge when trimmed, and is also ornamental. The African box is not desirable, because, although it makes a perfect fence, as well as a hedge, it has many disadvantages. Cutting it back is neither a pleasant nor profitable occupation, because what is taken off has to be burned. As the seed is carried by birds, there is danger of it spreading. I would not give it a place unless in very special cases. Almond trees are considered as being more suitable for breaks around a garden. For tree planting, pines and the different kinds of gums take pride of place in the greater part of this district, because, as well as providing shade and shelter, they produce excellent timber. The Remarkable pine is a quick grower, and with a world shortage of timber has a considerable commercial value. The waste makes good firewood, and the green needles make a good tonic for sheep. This tree should not be planted close to buildings or a fruit or vegetable garden, unless kept as a hedge. Some of the different varieties of gums are of considerable value for sawing purposes, as well as providing a good quality firewood, and are well worth growing for the latter purpose. Whilst the Government is doing good work in the establishment and conservation of forests, and in providing young trees to all who want them, free of cost, is it not up to the people generally to take advantage of the opportunities thus afforded to have, as it were, an arbor day on every holding? This, if carried out, would be of immense benefit, because a man who plants a clump or row of trees is a benefactor to others, as well as to himself. Could we estimate its value, what a difference it would make to the man with a dairy herd or a lambing flock. But all stock would benefit. If we do not consider it from a monetary point of view, let us remember that we owe something to our dumb animals. It may perhaps be contended that trees occupy space, and also impoverish the land in which they are grown; but what is that in comparison to the benefits to be derived from them. Let it be borne in mind that too much wind will reduce the fertility of

some classes of soils by preventing the accumulation of humus. There is another aspect of the question deserving of consideration. In many places the district roads have become almost, if not wholly, impassable, and threaten to get completely out of hand, owing to the drifting sand. This has become a very serious problem, and the difficulties are becoming greater each succeeding summer. Now, whilst it will not perhaps be possible to plant breaks on every spot inclined to drift, it is certain that in many places the drift nuisance can be effectively dealt with by tree planting, more especially if taken in hand in time. And as adjoining landholders will benefit, it does not seem unreasonable to expect that they would co-operate with district councils, if only to the extent of protecting the young trees. We have examples in the district of drifts, both on roads and on private property, which at one time appeared a big problem, being practically reclaimed by the enterprise of landholders in planting trees. It may be added that sandy land is best adapted for tree planting, more particularly pines, which will not make good timber unless the roots can penetrate the subsoil. Would not a general system of tree planting, such as here outlined, as well as fulfilling the purposes for which they are primarily intended, make an immense difference in the general appearance of the country? What a contrast to see the countryside dotted with hedges and clumps or rows of trees, in comparison to an open, treeless plain. Does it not appear reasonable to think that such would be conducive to the general health of the people? Let an arbor day be observed, and thus acknowledge our appreciation of some of the most valuable and choicest of Nature's gifts." In the discussion that followed, Mr. Pritchard said the subject was one that demanded attention if only for the difference trees made to the climate. They could only attribute the severity of the present-day summers to the lack of trees in their district, which was originally covered with a dense forest, and it was their duty to replace, to some extent, that forest. Mr. Major thought they could reclaim their sandy roads to a great extent by planting trees. Those who had done so had performed a valuable work for the district. Mr. A. A. Sassanowsky said they could secure the young tree plants for nothing, but the trouble was to keep the stock from destroying them. A fence had to be erected around each plantation, but they seemed to forget that they had to protect the trees for seven to 10 years afterwards. When they made a plantation they should always make sure to put a good fence around it. If they did not, in a few years it would be of no use. The sparrow epidemic was getting greater every year, and they took advantage of all trees that were planted. Hedges also harbored starlings. But the benefit gained from trees he thought would more than counterbalance the damage caused by sparrows. The time was coming, and that shortly, when they would be very short of fencing material in the South-East. If given the slightest chance the native trees would regenerate themselves. The people should try to get the Government to take a stand in regard to the preservation of the forests.

**FRUIT TREES FOR THE FARM.**—Mr. H. H. Orchard (Orchard Inspector for the South-East) read the following paper:—The man who intends planting fruit trees, whether for commercial purposes or only for home consumption, should bear in mind several points. Yearling trees only should be purchased. A three or four year old tree suffers more from transplanting than does a one-year-old. The root system is larger, and more liable to damage, and the check is naturally more severe. The strong, healthy young tree, one year old from the bud, receives only a slight check, and soon recovers. It will fruit almost as soon as the older one, and certainly grows into a better tree. If purchased from a reliable source there should be no fear of finding, after a few years, trees not true to name. See that apple trees are worked on blight-proof stocks. When selecting trees, order varieties that ripen at regular intervals, and so ensure a continuous supply of fresh fruit. In the following list the trees of each kind are placed as near as possible in their order of ripening. Always have at least two trees of the one species, but not necessarily the same variety. *Apples*.—Early ripening—Gravenstein and Ribstone Pippin, dessert; Twenty Ounce, or Maiden's Blush, and Lord Nelson, both good large cookers. The early apple lacks keeping quality. Medium and late keeping—Jonathan, one of the best for the district; King David and Delicious, both recommended. Cleopatra is one of the best all-round apples cultivated, but is susceptible to diseases in a wet district. Dunn's, under wet conditions, cracks badly at the stalk, but is otherwise a very fine apple, cooker or dessert. London Pippin, or Five Crown, does very well, and I would recommend it in preference to the above two. Hoover, dessert, and Reinette du Canada, a large

dessert or cooker, both do well in the South-East. Rome Beauty, an excellent apple, well suited to the district, good keeper. Rokewood, very late, dessert or kitchen, great keeper if handled carefully. Esopus Spitzenberg, Nickajack, Scarlet Nonpareil, and Foster are worth trying if space permits. *Pears*.—Williams' Duchess, best pear for canning and preserving; Beurre Capiaumont, early ripening; Gansel's Bergamot, dessert; Beurre Rose, dessert; Glou Morceau, dessert; Josephine de Malines, Vicar of Winkfield, Winter Nellis, all late keeping; Kieffer, Uvedale St. Germain, very large cooking variety, will keep five or six months without any particular care. *Apricots*.—Oullin's Early, Royal, Moor Park. The Royal requires a special form of pruning. *Peaches*.—Briggs' Red May, Triumph, Hales' Early, Early Crawford, Muir, Elberta, Lady Palmerston, Salway. *Neectarines*.—Gold Mine, New Boy, Lee's Seedling. *Plums*.—Early Orleans, Angelina Burdett, Diamond, Wickson, Fellemberg, Coe's Golden Drop, Jefferson, and Prune de Agen. Wickson is a Japanese plum that does well locally. *Cherry*.—Early Purple Guinée, Burgdorf's Seedling, Biggareau Napoleon. *Figs*.—White Genoa, Black Ischia, Adriatic, Castle Kennedy. The latter appears to be well suited to the South-East. *Quinces*.—Smyrna and Rae's Mammoth. *Almonds*.—Brandis, Peerless, Hatch's Nonpareil.

KALANGADOO, May 14th.—Mr. W. J. Evans gave an interesting report of the recent Conference of South-Eastern Branches. Several other matters of local importance were brought before the meeting.

### STINKWORT.

The weed known as stinkwort in this State, and to botanists as *Inula graveolens*, and which has long been established in South Australia, is so widely spread that it would be quite useless to bring it under the Noxious Weeds Act, says the Director of Agriculture (Professor Arthur J. Perkins), in reply to an inquiry from Victoria. I can, however, quite understand that in a country in which it is first introduced there may be some advantage in dealing with it as a noxious weed, and in attempting to stamp it out. On the other hand, I am satisfied that, from the farmer's point of view, it is far less troublesome than is usually supposed. For a number of years I had control of a farm in a district in which neighboring farms were very badly affected with this weed. Personally, however, I had no difficulty whatsoever in dealing with it, and it was generally a difficult matter to find stinkwort plants on our farm.

The position is, of course, that it is a summer-growing weed, which does not extend much on land that is not cultivated. Generally speaking, it springs up in the stubble of cereal crops, and makes most of its growth between harvest and seeding time. My own experience, which is corroborated by many other farmers in the State, is, that if you graze your stubbles heavily with sheep immediately after harvest, you need not fear stinkwort development. Sheep

destroy this weed very rapidly whilst it is still in the young and tender stage. It has had the reputation of being dangerous to ewes in lamb. Personally, however, I am rather inclined to doubt this view; on the other hand, as it matures, it becomes hard and stringy, and it is possible that livestock partaking of it too freely when other herbage is scanty may develop digestive troubles.

In conclusion, therefore, I know of no better method of getting rid of stinkwort than heavy grazing with sheep in the early stages of its growth. Naturally, in a district that is badly infested, the cure could not be completed in a single year.

### SULPHATE OF AMMONIA.

A series of questions relating to the use of sulphate of ammonia were submitted by the Maitland Branch of the Agricultural Bureau at the recent Conference of Yorke Peninsula Branches to the Superintendent of Experimental Work (Mr. W. J. Spafford). In replying thereto, Mr. Spafford said:—The outstanding action on soils of dressings of sulphate of ammonia is the reduction of their lime-content, and as a consequence it is now recognised that this form of nitrogenous fertiliser should only be applied to soils well supplied with lime. When used on clayey soils this decrease of lime leads to the exaggeration of their natural stickiness, and in the end the continued use of heavy dressings will reduce the lime to such a small amount that the soils become more or less sterile; but, naturally, this will take a long time.

An application of  $\frac{1}{2}$  cwt. of sulphate of ammonia per acre, as well as the phosphatic fertilisers usually applied, will be sufficient to increase the crop fairly considerably, remembering that this increase will be largely leafy growth rather than grain, and so this fertiliser has more value for hay crops than for grain crops.

As many of our spring seasons are comparatively dry, and as there is very little danger of the nitrogen contained being washed out of the soil, best results from dressings of sulphate of ammonia are likely to be received when applied any time between seeding and the end of July.

As sulphate of ammonia is very readily washed into the soil, it is only necessary to broadcast it on the surface of the land, and any broadcasting machine which can be regulated to sow a small quantity will do for the purpose.

Anything which encourages the wheat crop to make vigorous growth in its early stages, helps that crop to grow away from the fungus disease "take-all" ("white-heads" and "hay-blight" are usually forms of "take-all"), and so applications of sulphate of ammonia, providing always that they are made at seeding or very soon afterwards, will tend to keep this disease in check.

## AGRICULTURAL PUBLICATIONS.

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